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30 . +

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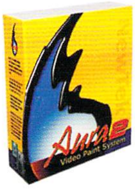

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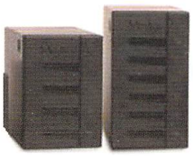

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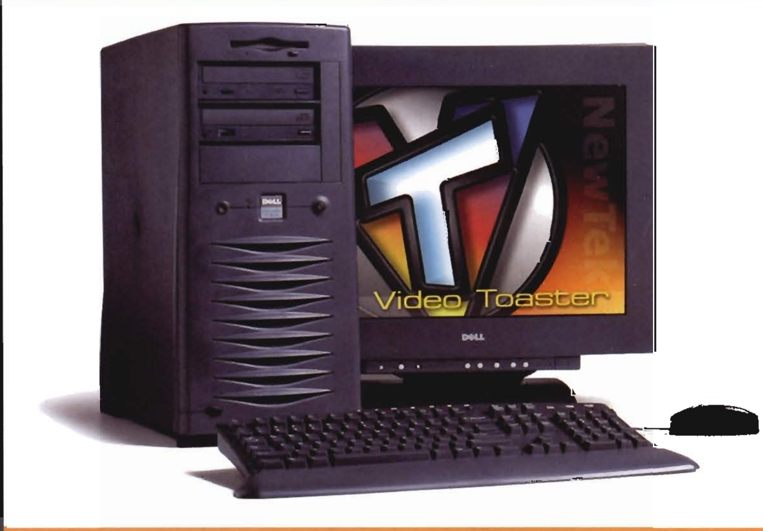
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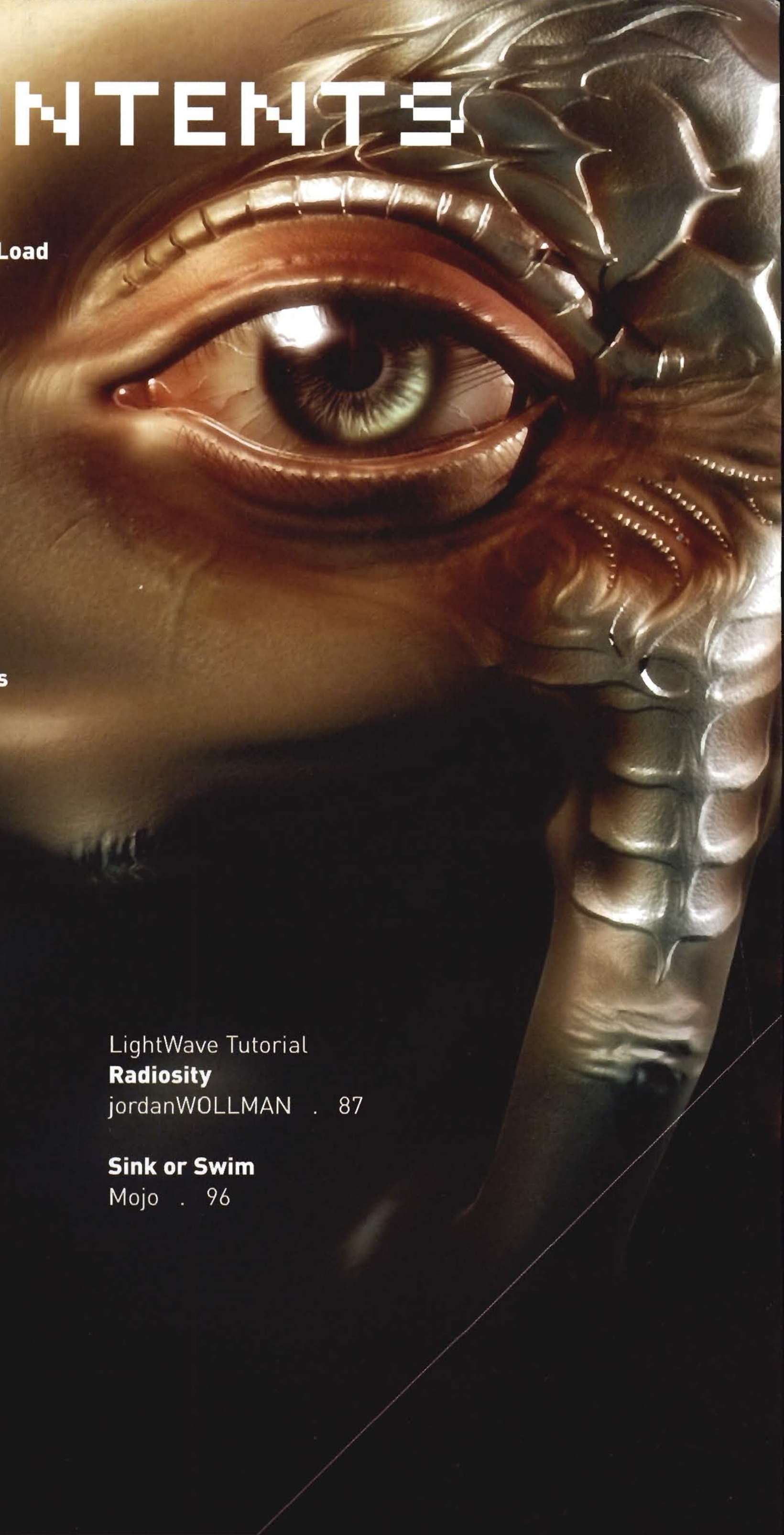

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Taron ruminates about his latest creation, *Sand Harps:*

"It's about the sand harps, or sand organs, and dancers. The calm silent dunes begin to suck in air through giant holes in the ground, which quickly appear around a big plateau, filled with bizarre but beautiful structures that evolve into the sand harps.

A moment of silence builds up energy and suddenly fills the harps with only a deep roar. The ground shakes with the frequent interference of the bass tones when we see the sculpture of the dancer, cracking through the skin of a stone, rapidly revealing a distorted face pained by the sheer volume of the noise.

The sound stops as the dancer is fully unwrapped. High tones of the pipes now begin to play a melody, which transforms her expression to delight. She begins to move to the music, ecstatically dancing from harp to harp, each one triggering different motions and emotions of her dance, displaying beauty and wonder, as well as distorted anger and despair. The cover is a collage of some of these elements.

DICKDEJONG.MOLLYDINKINS

RELOCATION .

A Bigger, Better Home

Welcome to the Premiere edition of our new publication, ***newtekpro.***

Back in late January, when we, as Editors of *NewTekniques,* were fighting to coax eight more pages of content out of the powers at Advanstar, we were informed that we were assembling the last issue. In the eyes of a multibillion-dollar corporation, the bottom line did not add up. We were relieved, because the magazine had been withering from benign corporate neglect. (Instead of giving us those eight pages they slashed even more.)

Since the demise of *NewTekniques,* we have been gathering the resources to start ***newtekpro.*** Often the process has been like catching a wave and letting the surf take us into shore. The support from the NewTek community has been tremendous. And the strength of that community is one of the main reasons that we're undertaking this endeavor. Throughout the years, the Video Toaster users, the LightWave pros, and now, the Aura artists have proven a devoted and loyal lot. We are dedicating this magazine to you.

The history of publications for the NewTek community has been illustrious and we are grateful to those who have preceded us for paving the way for ***newtekpro.*** Though many of our writers are familiar to you, this magazine is a new house built from the ground up. We believe that creativity and good design should be infused in every production we undertake and we want that reflected in every page of the magazine. To that end, our magazine is in good hands with Jacqueline Tieu and Charlie Wan, our adventuresome and innovative Creative Directors.

We owned a fine art gallery for ten years, which often was grueling. But we prize exciting art and admire the artists who ply their craft to present us their exhilarating creations. In every issue of ***newtekpro,*** we will dedicate a portion of the magazine to profile the sensational artists working with LightWave, Aura, and the Video Toaster. We know that you will find these portfolios inspirational and instructional. We were deeply gratified when Taron, one of our favorite artists, consented to find time in his busy schedule to compose the image for our Premiere cover.

We also understand that the magazine has to deliver great content for us to survive. We have lined up a wonderful group of contributors who will provide a relevant mix of tutorials, reviews, and features. Also, in every issue, our crack cadre of columnists will be covering a wide spectrum of topics concerning NewTek pros. And in a wonderful instance of circularity, we are pleased to include Lee Stranahan on our staff. Almost ten years ago, Lee, who will be manning the third party product beat for us, founded *Bread Box,* the first Video Toaster magazine.

In fact, many of our writers possess a vast wealth of information and experience - in business, technology, art, and education. For example, Mark Stross has been championing Toaster technology in corporate boardrooms. He will share his successful business principles that have placed NewTek products at the forefront of sports arena displays. Annie Borden, our LightWave tutorials editor, for years has been creating and teaching 2D and 3D animation. Her in-the-trenches background will ensure the tutorials are undeniably understandable and useful. Also, in the next issue, Meni Tsirbas will contribute a column on creative wacky solutions to LightWave challenges. Send him your thorniest problems. He will be your digital Dear Abby. And Mojo's back.

In addition, we have recruited dhomas trenn (our editorial predecessor at NewTekniques) to assist us. Working with him again on this issue, we are reminded about how diligent dhomas is in digging through the details of an article. Since dhomas also doubles as our Reviews Editor, his doggedness will prove invaluable to you, our readers.

One final note - we constantly are amazed at the many marvelous submissions to the ***newtekpro*** website Art Gallery. We love discovering these talented artists from around the world. We want to expand our coverage internationally and we plan to profile a few of our favorite artists, studios and projects, worldwide.

We want to hear from you - ***newtekpro*** is your magazine - email us and tell us what you want to see and read. With LightWave 6.5, Aura 2 and the upcoming release of Video Toaster [2], we are living in exciting times in the NewTek world. Let ***newtekpro*** be your tour guide.

editors@newtekpro.com

DHOMASTRENN

CREATIVITY IN MOTION .

I've met too many, what might be called, closet artists. Potentially the most creative people on the planet, who are inspired by pushing themselves as far as they can beyond their own creative aspirations. Closet artists manifest themselves in all forms, including: musicians, painters, sculptors, writers, designers, dancers, singers, animators, and videographers.

I say closet artists because for these people that's where their ideas, or the results of their creative efforts, end up - in boxes, in a pile, at the back of a closet. Or for the digital closet artist - on a backup disk, in a fireproof box (it's important to keep secrets well protected!), on a shelf, in the closet.

For some people, creativity ends the moment an idea stumbles into their mind. Some will make the extra effort to write an idea down, though they'll never put it into motion; others might just tell a friend about it. While many ideas ARE taken to the next level and beyond, too often much of the effort goes unnoticed because the rest of the world, beyond a few close friends, is never exposed to the artist's work.

Recognize the symptoms?

Being an artist is about thinking up an idea, or being struck blindly by one. It's about finding a way to bring the idea to life, finding the tools to do it, or making them. It's about perfecting the skills you need to take an idea off the ground, into the air, out into space. It's about finding the time to bring that idea, and ones that follow it, into reality. Creativity never ends... nor does the effort required to create.

They say that the first step to recovery is admitting to the problem. Once you've admitted it, the next step is doing something about it. So, what are YOU doing to put your creativity into motion?

Welcome to ***newtekpro*** magazine ... Creativity in motion.

dhomas@newtekpro.com

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newtekpro
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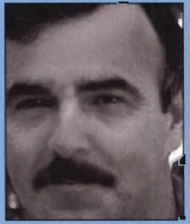
Patrik Beck is a veteran LightWave guy from Wisconsin. A full time animator, part time LightWave instructor, and occasional writer, he has just finished authoring the *LightWave 6.5 Project Book*, which is due out this summer. Current projects include an animated Christmas special, an independently produced movie, and a script about giant ants. zippie@execpc.com



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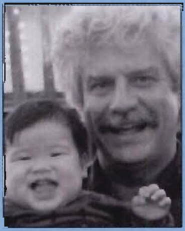
Steve Bowie is the "Aura Insider." In addition to his writing duties, Steve designs Aura plug-ins that he often posts on his Aura Insider corner of the newtekpro website. Steve owns and operates LIGHTWORX, an authorized NewTek dealership in Toronto. steve@videotoasterworx.com



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Jim Cullers divides his time between work and family in Austin, Texas. His media career includes twenty-five years as an independent producer specializing in documentaries, commercials, and instructional video, where he has done everything but the acting. jcullers@newtekpro.com

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Almost every day, you can find Blaine Holm generously answering questions on the Video Toaster and Flyer mailing lists. Blaine owns Video Hardware Services in Manchester, NH an authorized NewTek dealership. blaine@videohardware.com

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As a Senior Artist at Namco Hometek, Michael Hulme has applied his LightWave talents on games like *Ms. PacMan* and *Dead to Rights*. Now living in the Bay Area, Michael previously worked at Cinemaware/Malibu Interactive, Electronic Arts, and Universal Studios. Hulme123@aol.com

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While at Foundation Imaging, Dave Jerrard worked as a VFX Animator/Modeler/Technical Director on *Roughnecks: The Starship Troopers Chronicles and Max Steel*. He has co-authored two books. His second, *LightWave 6.5 Applied*, will be in bookstores in August. dave@jerrard.com

Bob Ketchum
Bob Ketchum is the owner of Cedar Crest Studio in Mountain Home, Arkansas, where he's been producing music and video since 1973. He's a former radio talk-show host and three-time RIAA Gold Record recipient. cedarcrest@oznet.com

Mojo
Mojo moved to Los Angeles in 1992 from New York City to be the first employee of Foundation Imaging. With one Emmy Award plus two nominations, he feels his greatest accomplishment has been finding good bagels, pizza and Chinese food in L.A. Mojo now works as a freelance producer/visual effects supervisor. mojo@mojoplex.com

TJ Nabors
TJ Nabors began her career as an artist, theater set and costume designer. She transferred her fine art skills to the computer winning awards for her web design. A passionate horsewoman in Texas, she assembled an instructional interactive CD about the history of horses. Four years ago, she moved to Portland, Oregon to work at Will Vinton Studios. She just finished an independently produced 3D stereoscopic ViewMaster on Harry Potter for Mattel. tnabors@hotmail.com

Lee Stranahan
In the mid 90's, many LightWave animators were baptized in one of Lee Stranahan's popular LightWave training workshops. Lee also founded *Bread Box*, the first Video Toaster magazine. lee@Stranahan.com

Mark Stross

Mark Stross was born in England to parents in the film industry and grew up on movie sets. Now living in Los Angeles, Stross founded and is the CEO of Playable Television Inc. Mark is also Vice President of Technology of ANC Sports whose clients include Disney's Wide World of Sports stadium, MCI Center in Washington DC, Gund Arena in Cleveland, Ohio and the Corel Centre in Ottawa, Canada. In addition, Mark currently is the Head Consultant of Technology for Planet Hollywood.
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Sy Witt

After Sy Witt turned down a big label recording contract (as a singer-songwriter) in the early '80's, he opened Ramona Rose Studio, Inc. in Cleveland, Ohio, a video production company, (named for his wife Ramona Rose DeMio). Together, they sidelined as a cab driver, waitress, chef, and tax collector to keep the business afloat. Over time, the studio has grown into an award winning business. sy@ramonarose.com

jordanWOLLMAN

Based in Dallas, jordan is currently co-host, writer, and visual effects supervisor for the "VT Show" digitalGENIUS to be released this summer. jordan@exodusmm.com

TIM JENISON

HEAVY IRON .

Doing the math

In the days before computers, every newspaper office housed at least one Linotype machine. These multi-ton behemoths actually cast molten lead into the shape of letters of the alphabet as an operator hit keys on a keyboard. The resulting lines of type (hence the term "Linotype") were placed into the printing press where, like a rubber stamp, they transferred ink to paper. Today, you can "set type" much faster and cheaper with your PC and a printer, which has created an explosion of variety in the publishing world.

A Linotype machine is really a specialized data manipulator. The input data is the keys being pressed. The output data is the shapes of the letters in the line of type. A PC is a general-purpose data manipulator, and that's why it could replace a Linotype.

Like the pre-computer newspaper office, a TV station is full of "heavy iron." And, like the Linotype machine, it's all headed for the scrapyard.

If you think carefully about all the equipment in a TV station or postproduction facility, you'll realize that almost all of it is there to manipulate data, usually in the form of video signals. And a computer, if it's fast enough, can do the same thing. Let's look at a few examples.

Videotape Recorder

The earliest versions were literally heavy iron, the size of a large refrigerator. That's what it took to record a high quality video signal onto two-inch wide tape at that time. Today, you'll probably find much smaller Betacam machines. Some are even "portable." What they really do is store data. Input it now and output it later. Can a computer do that? Sure.

Videotape

Heavy iron? In a way, yes. The coating on videotape is iron oxide. And those ten-inch reels of two-inch tape were indeed heavy! Betacam is better, but not much. DV is a step in the right direction. The computer-age equivalent to this VTR "media" is the hard disk. Unlike videotape, hard disks become twice as cheap every year or so.

Digital Video Effects unit

I've have an ADO here that tips the scales at about 200 pounds. 200 pounds of electronics to do real fast arithmetic on a video signal. Gee. Almost sounds like a computer...

Production Switcher

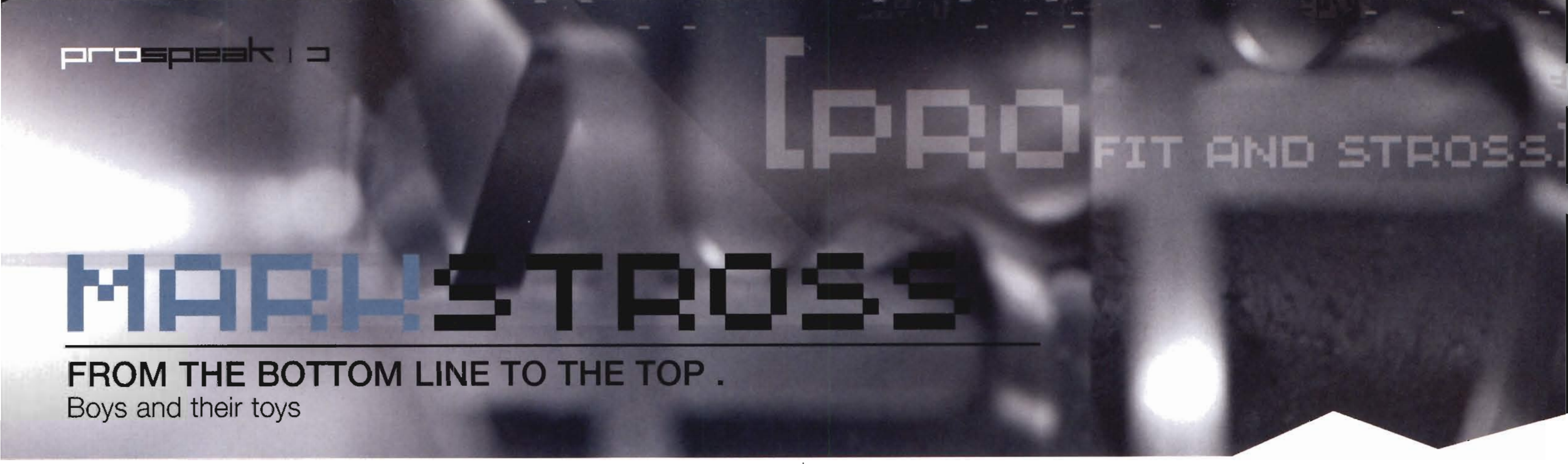
With all those cables going in and out of the switcher, and all those levers and dials, it's hard to think of it as a data manipulator; but sure enough, that's what it is.

Transmitter

Data manipulator? Yup. Changes video data into a form that can be transported to your viewing screen. Kinda like streaming video on the Internet, only heavier and more expensive.

You get the idea. It's all data processing. Very fast data processing. When NewTek started work on the Video Toaster [2], we saw that computers were approaching the speed necessary to do ALL of these jobs simultaneously.

It took some very creative software to do it, but we're finally there. And those very fast computers are now very cheap computers. Goodbye, heavy iron!



[PROFIT AND STROSS]

MARK STROSS

FROM THE BOTTOM LINE TO THE TOP .

Boys and their toys

We all want success and balance in our lives.

I don't presume to have all the answers to life's challenges, but I do have lessons and stories to share that should inform, frustrate, and entertain those striving to make their dreams come true.

During my career, I have developed concepts and ideas that blossomed; I've also made my share of mistakes. Tell me if this one sounds way too familiar: I've been known to let my enthusiasm dictate my decision before I did my homework - especially when buying equipment.

I imagine many of you are contemplating upgrading your computer audio/video system. (Of course, I assume that you have your eye on the Video Toaster 2.) Well, in the old days, I would attend NAB and get so excited about the next new cool must-have tools. I would rush home and tell all my friends and relatives, and their friends, and finally, when everybody was sick of listening to me, I harangued my pets.

In no time, I would convince myself that this year's magic piece of equipment was the key to my future. Then, I would invent ingeniously creative justifications for the purchase of the system, and buy it without any rational consideration of my bottom line.

Well, I have learned the hard way that this method is completely wrong when you are making investments in your business - or even your hobby.

Making Decisions Easier and Less Stressful

First, you need to consider any acquisition that you make in accountant's lingo - when you buy a piece of equipment, it's a "cost." And the debt has to be repaid. Now this concept makes sense, but most of us warp the definition of repaid to suit our serendipity, not our spreadsheet. To justify the inevitable purchase, how many of your moneymaking projections are based on imaginary accounts receivable or prospects that you haven't even begun to explore?

To make things worse, once the equipment is purchased, the burden of repayment can place excessive pressure and stress squarely on your shoulders. With this added weight, you march bravely into new waters, only to be pulled under by the burden of debt. This scenario does not have to happen if you follow some proven guidelines.

> BUT, YOU PROTEST, "I MUST HAVE THIS NEW GIZMO TO KEEP UP WITH THE JONES STUDIO."

The short and sweet concept is, *always have a market ready before acquiring hard costs for equipment*. Line up income generating projects first. Start by sub-contracting, leasing, or borrowing the equipment you need. Using other people's equipment can be inconvenient since you usually need to adhere to their schedules, but the net result is that you are forced to budget your time, resources, and money.

When you are successful and you start generating more projects, your bank account will grow. Then you can begin acquiring your own equipment with more cash and a lot less credit. And since you know that you can make money using this equipment, you will minimize stress and maximize your profits.

But I Love My Toys

How many of us buy equipment as a "cool tool" to do projects that in all honesty can be accomplished by our other older tools? (C'mon, raise your hand back there.) But, you protest, "I must have this new gizmo to keep up with the Jones Studio." Great tools, bad business. Don't let "cool tool" tunnel vision distort the bigger picture.

Your myopia will improve if you always treat your toys as toys, and your needed equipment as, sadly, depreciating assets that must be fully used and completely drained of function before being retired.

In our company, we have adopted a policy about buying extravagant equipment that has benefited our image *and* our balance sheet. Our company sells our services and products to major corporations. We discovered that our clients expect us to be decked out with the top-notch tools when we make pitches. This realization comes with a steep price tag.

I'm a technologist, so I show up with my wireless Palm and a Slim-Pro Sony laptop in my ultra svelte brief case. I'm packing high tech power, but doing it discreetly. This image sends a very convincing message to my client that I know my business. We consider these toys as marketing company propaganda instead of real production tools. And we waited several years before we could afford the toys. We made do with less, using all our equipment resources until they where retired rich with project experiences.

MARKSTROSS | FROM THE BOTTOM LINE TO THE TOP .

We could live without the toys, which is the #1 guideline when acquiring equipment.

Rule One

Only borrow money for tools that you can't afford but can't survive without! If you can rent / lease / borrow the same tool and avoid incurring debt, do it. Ultimately, it's all about the bottom line.

Rule Two

Always be honest about what is a toy, and what is not. I know making that distinction can be tough because many of those toys have more power than your old ones. (And they're so shiny.) But again, use logic and common sense.

Rule Three

Include equipment upgrades within each project's budget. That way, you can sensibly schedule the expenses of the new equipment over a period of time. Before you can say "new product cycle," you will have saved enough to pay for your new tools and toys, with cash instead of credit.

Running a successful business requires engaging in a constant private dialogue with your common sense. Do your homework, always listen to your conservative inner voice, and then trust your instincts to make the right decisions.

Next article will explore the "Concept of Reciprocity."

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MARLIN STUDIOS

MICHAEL HULME

IT'S ONLY A GAME.

You're familiar with that old saying "It's only a game," used as an admonition to not take it too seriously, right? Well, I sure hope that maxim doesn't apply to the Games Industry and its products. I couldn't bear the thought that my career, all my concentrated efforts, not to mention the last ten years of my life, have all been frivolous.

Of course, I know better. In the last decade, I have been seriously dedicated to a profession that has propelled me on a wild ride with many difficulties, plenty of discoveries, and rewards beyond imagining! I now have an opportunity, on the pages of this magazine, to draw you into that world (if you're not already there) and share with you some of my experiences, past and present, in the Games Industry. Hopefully, you will gain some insight about the development process, pick up a few new tricks, and maybe even feel compelled to pursue a career in the Industry. I'm looking forward to contributing what I've learned, and continue to discover daily.

Throughout my career, I've had the privilege of working with some of the brightest, most talented people around. In a communal effort, we have created games that have entertained literally millions. In the process, I have learned so much, from so many, at companies such as Cinemaware/Malibu Interactive, Electronic Arts, Universal Studios and now Namco.

Movement throughout this industry is commonplace; but for me, one factor remained constant along the way - LightWave. As I've grown in the industry, so too has LightWave, and I believe the most exciting time for a LightWave user, in this or any industry, is right now! The release of LightWave 6.5 marks a significant step in NewTek's commitment to embrace the Games Industry and provides game developers with the tools that eclipse any other 3D package in functionality, extra features, and maximum quality.

> AS I'VE GROWN IN THE INDUSTRY, SO TOO HAS LIGHTWAVE, AND I BELIEVE THE MOST EXCITING TIME FOR A LIGHTWAVE USER, IN THIS OR ANY INDUSTRY, IS RIGHT NOW!

I started out in 2D animation working on Saturday morning cartoon shows, and eventually gave in to the lure of 3D computer animation (and computer generated inbetweens!!!). When I began, 3D was truly in its infancy. We've come a long way together. In fact, the early game titles I worked on still utilized my 2D skills, but as the technology grew, so did the demand for higher quality images. 3D graphics offered a higher degree of realism at a fraction of the time to create it. And once your character was built, or your environment modeled, textured and lit, you were all set.

As far as realism goes, LightWave offered true raytracing back at a time when only Super High End systems were capable of it, and it came bundled with another of NewTek's groundbreaking products, the Video Toaster. Being an artist of constant curiosity for new and advanced tools, as well as always searching for ways to create my own animations at home, I naturally took the bait. I truly believe I've had a bit of an "edge" ever since.

So, I hope you'll be joining me as I report back from my ongoing journey through the ever-evolving world of games production using LightWave. The lines between the various entertainment industries are blurring. Many of the tips and techniques I use to model and texture characters and environments for games can be utilized as well in the film and television worlds.

The hectic pace of creating a game gives rise to, shall we say, "shortcuts." These ingenious "workarounds" not only save us valuable time but they also elevate the quality of our output. In future issues, I plan to reveal many of the tricks we use in the Industy and discuss the LightWave tools that make them work.

I don't want you to leave empty-handed today, so here's a practical gem. In 2D animation, several different color schemes often are assigned to the same character depending on the environment, mood or action that takes place in a particular scene. For example, the artist may design three palettes, the standard daylight colors, a set of more blue monochromatic nighttime colors, and maybe even a color scheme for a forest fire sequence (hey, Bambi had one!).

This method also can apply to game characters. Realtime lighting requires intensive computations, which can bog down the game's frame rate. So why not help the processor along? In LightWave, you can burn the environment colors into the vertices of your model as a Color Vertex Map (Vmap).

But did you know that you can burn, and store, several different Color VMaps into an object's surfaces? **Figure 1.** When the programmer receives your model, whether it's a character or even a cityscape, he can parse the data contained in your object and see several entries, clearly named, for Vertex Color schemes.

In the case of a city model, your VMap could contain deep blues down dark alleys and saturated Reds and Yellows where neon signs light the street areas, all baked in, pre-calculated, and specifically set up as you intended. For your protagonist's head, you could burn in a Daylight VMap with blue sky, sunlight and ground reflection colors. **Figure 2.** You can see in **Figures 3 and 4** how burning in additional color schemes into the vertices of the head reflects the mood of the scene. Since the object is self-lit, without any scene lighting acting upon it, the character is ready for action without burdening the processor. ("Look Ma, no lights!").

In the columns to come, I will fill your arsenal with other cool LightWave tricks that may raise a few eyebrows along the way. It humbles me to join the ranks of the other LightWave tutorial, column and book authors, who have assisted my quest for LightWave knowledge through the years. I hope I can offer even a fraction of what they've given to me. So, until next time... Keep Rendering!

Now, I'm off to the Electronic Entertainment Expo (E3) to showcase to the world the latest game I've been toiling over at Namco, titled (insert blatant plug here) *Dead to Rights.* God, I love this job.

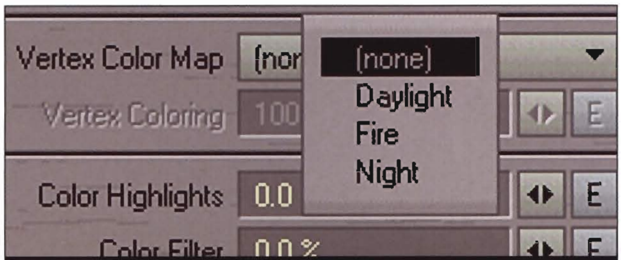

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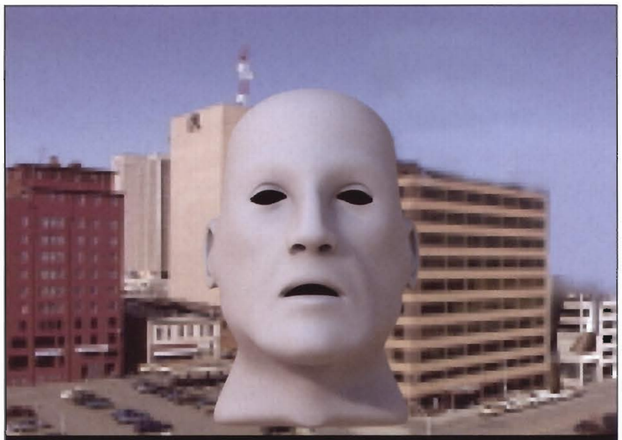
Figure 1



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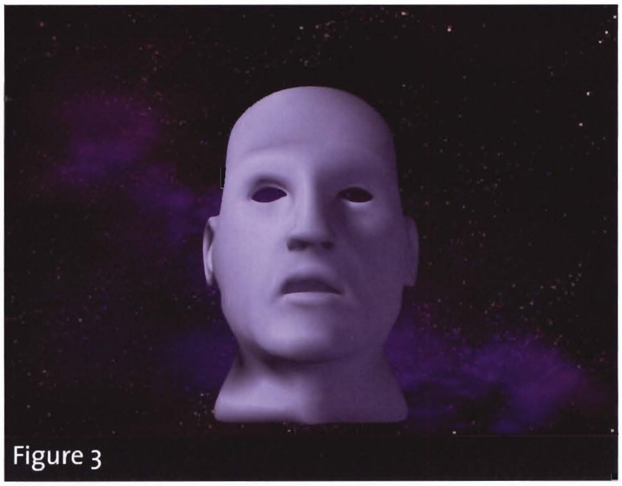

Figure 3

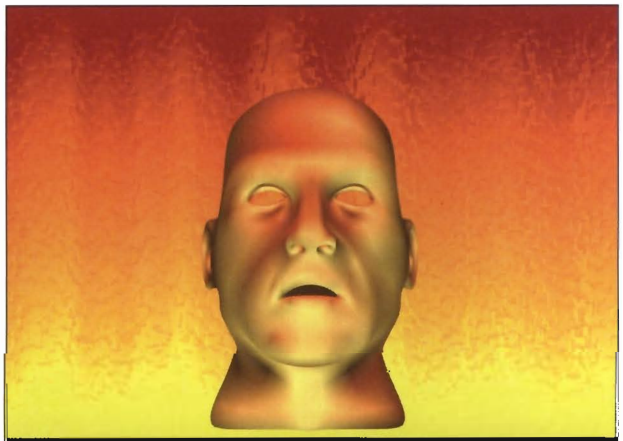

Figure 4

[WITT AND WISDOM]

SY WITT

ALL CREATURES SMALL AND ICKY.

Why I Admire Tippi Hedren

Recently, my wife ordered me to strip to my underwear in the back yard, within gawking distance of at least five neighbors. Unfortunately, my command performance wasn't some kinky foreplay. And, no, I am not an exhibitionist. Why, you ask, did I disrobe? To answer, let me take you back a couple of weeks. (Cue the wavy transition.)

I was sitting at my edit bay one fine day when the phone rang. On the other end of the line was a scientist from the U.S. Department of Agriculture. "We've located the worst roach infestation in your city," he announced excitedly, "and you were recommended to tape our video!" My first instinct was to jump out the window screaming, but I decided to listen to the details.

This scientist claimed to have discovered the most effective means of eliminating these sinister, skittering critters. USDA officials wanted to document the method and distribute this material to all the Public Housing organizations in the country. As they agreed to my quoted price, I tried not to fixate on the little brown bugs, but instead on the big green bucks.

The shoot was an experience that I'll never forget. Part of the scientist's technique consisted of blasting a heat gun to flush the little ladies (and a few guys) from their cozy roach abodes. Believe me, you haven't lived until you've witnessed a whole section of a wall turn into a toasted rippling stampede. One intern sucked the sprinters into a special vacuum cleaner, while two others tried to count them. Utter mayhem ensued (which makes great video, by the way).

At one point in a stairwell, while I was tilting towards a wall to compose the perfect shot of a roach suburb, everyone started yelling at me. I looked left and spied a brigade of six-legged soldiers poised to launch an ambush if I came any closer. I'll spare you the details of the paratroopers soaring from the ceiling or what happened when we dismantled the fire alarm! (Is your skin crawling? Then, I don't need to elaborate further.)

> **MY FIRST INSTINCT WAS TO JUMP OUT THE WINDOW SCREAMING, BUT I DECIDED TO LISTEN TO THE DETAILS.**

Moving from roach doo to pigeon poo, I discovered my only *true* phobia on a shoot for our local Housing Court. They wanted to produce a TV program about the health problems caused by pigeons. The Judge and a pigeon "expert" met me at an innocent looking urban building. To access the second floor, we snaked our way through the basement of a pet supply store and climbed two flights of rickety steps to my worst nightmare.

From our perch on the second floor, I saw the vestiges of a once beautiful space. Three floors of offices overlooked a central atrium area that was adorned with incredible woodwork, and now was inundated with a half-inch or so of bird crap.

Wearing facemasks, we taped a few interviews. Next, we moved into the attic where a couple of dozen of the "ugly doves" rested and nested. I started shooting the calm cooers without a qualm in my bones. Then our "expert" decided to stir them up a bit. He began hooting and waving his arms, riling the winged denizens. I was standing between the flapping flock and their only escape. If you've ever seen Hitchcock's "The Birds," picture me as Tippi Hedren.

The opening of the TV show includes the shot of the birds flying at me, (my phobia immortalized). Of course, if I had faded out the scene five seconds later, you could have heard my first adult scream.

The word is out in Cleveland, if you have an icky location video to shoot, call Sy. I'm like Mikey in the old cereal commercial, "Hire Sy, he'll try anything." I'm proud of that.

One of the key elements of my success is dedication. I did what I needed to do in both of those jobs and I have received referrals from them, which keeps my company growing.

Now, back to my wife and me (seminude) in our back yard, once she declared me roach free ... Well let me just say, if you are ever asked to tape a "roach session," DO IT! This business does have its perks!

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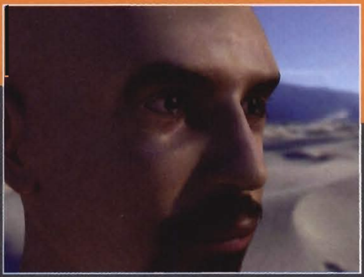

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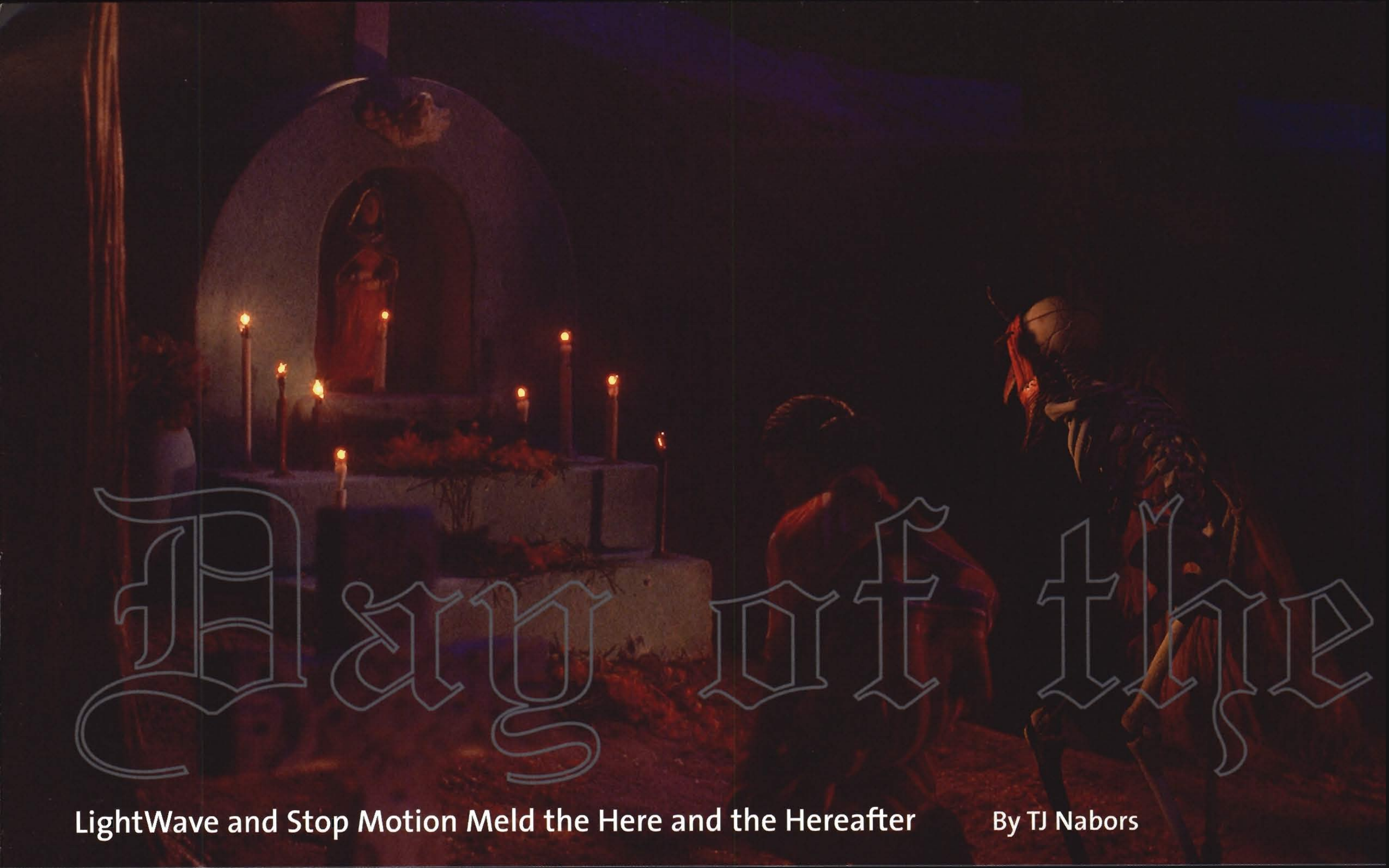

Day of the

LightWave and Stop Motion Meld the Here and the Hereafter

By TJ Nabors

Kirk Kelly's evocative short film celebrates the spirits steeped in the Day of the Dead. To capture the essence of this religious holiday, Director Kelly conjures a vivid stylized reality where he clearly depicts the different worlds of the living and the dead, yet one in which they deeply connect.

To portray the constituents of the two realms, Kelly decided to draw on the strengths of his employer, Will Vinton Studios, which is comprised of two distinct units, stop motion and CG. The Portland based animation company (best known for its Claymation California Raisins and the computer animated M&M's commercials) provided the elegant solutions for representing the terrestrial living (stop motion) and the ethereal dead (LightWave CG).

At Will Vinton, Kelly's work experience furnished pertinent on-the-job training for his project. As a senior director, he has been the intelligence behind much of the ubiquitous M&M's commercial campaign, which features the union of CG with live action. He has, as well, directed episodes of *The PJs*, the award-winning, stop motion series for Fox and WB, and countless other commercial projects.

Raising the Dead

Kelly says of his cinematic undertaking, "The general theme of the piece is the celebration of the Latin American version of the religious holiday, All Soul's Day or Day of the Dead. I believe this observance is a relic from ancient Mesoamerican traditions, which continues to be shaped by the Catholic Church today. It is rather like a wake carried on each year for those who have died.

"The major component of this celebration is a visitation by departed ancestors. The important element to me is the dream, trance, ecstasy state, which shamans in many cultures achieve through dance, meditation and ritual. In this state, individuals are inhabited by spirits or visit the other world. I believe it is the event of ritually becoming one's ancestors, which is being enacted in *Day of the Dead*. This is my personal interpretation of a cultural event. Regardless of the validity of this interpretation, it forms the basis for the film."

For Kelly, the technique of stop motion best expresses the natural force of gravity reflected in these earth bound characters. And for the

frolicking, floating, light-footed skeletons, Kelly chose digital tools to interpret their nether worldliness. The physical world cannot confine the aerie CG dead.

As a backdrop for the stop motion figures, a stunning miniature set was constructed, painted and lit. Kelly's vision of a quirky, but richly detailed Guatemalan cemetery replete with statue filled niches, a pyramid, and a thousand tiny, flickering, electric candles, was realized by designers, sculptors and engineers from both departments at Vinton.

In LightWave, an identical virtual set was constructed to scale. Compositing and projection maps on the surfaces of visible objects in the set serve to bring the virtual world into the practical. An in-house program was written to convert the motion control camera data into LightWave so that the moves would match.

The CG characters - the devilishly playful dead, with their hollow cat-eyes, overstated smiles, and caricatured costumes - also were designed and constructed in LightWave. The classically Mayan stop motion inhabitants were designed by Colin Batty, known for his Martians in Tim Burton's *Mars Attacks.*

According to Art Lead, Kate Nagy, the process of unifying these disparate elements in production continues to be an elaborate one. To further the meditative mood, a very graceful motion control camera was used on the cemetery set to shoot the stop motion sequences and background location footage.

A mix of moonlight and warm flickering candlelight dramatically illuminated the practical cemetery. The result is a dark and rich universe. The essential lighting was straightforward to replicate in LightWave. Additionally, rims and limited range bumps are used freely to exaggerate the skeleton's surprising and zany parody of human behavior.

High-resolution output to film is a most unforgiving format, so CG textures, especially those exposed to extreme close-ups, are difficult to concoct. LightWave 6.5 has been a blessing in its ability to enable UVs, to logically layer textures, and to infinitely tweak edge shadings. Because many of the textures are based on pre-Columbian artwork,

Deep Paint with Texture Weapons has been a useful tool for creating precisely placed and painterly image maps.

To maintain the continuity on this enormously complex project has been challenging given the fact that personnel and rendering resources are available only when there is spare time between commercial assignments. *Day of the Dead* is, however, nearing completion. Its look is stunningly original.

"Deep in the heart of an all-night vigil," describes Kelly, "the stop motion humans play out deliberate ritual behavior, gently rocking, lighting candles or patting out tortillas. With a sudden rush of noise, a flock of birds is aroused and flies away.

"The camera pulls back through a series of grave portals flying open, freeing frenzied skeleton dancers. Some are elaborately embellished, expressive of personality, vanity or New World history (the Mayan, the Conquistador, the Colonial dandy...); others are just bones. These frenetic CG characters are flying, dancing and mocking human life to mad percussion while the stop motion humans maintain their quiet, repetitive rites of observance.

"The close of the piece comes with a dawning in the sky. The meditative figures stand, pulling around them their cloaks or serapes. As they do, the dancing skeletons rush in to be incorporated into the human figures. Once again the quiet nature of this place settles into the close. The human figures make their way toward the gate, leaving the cemetery." ntp

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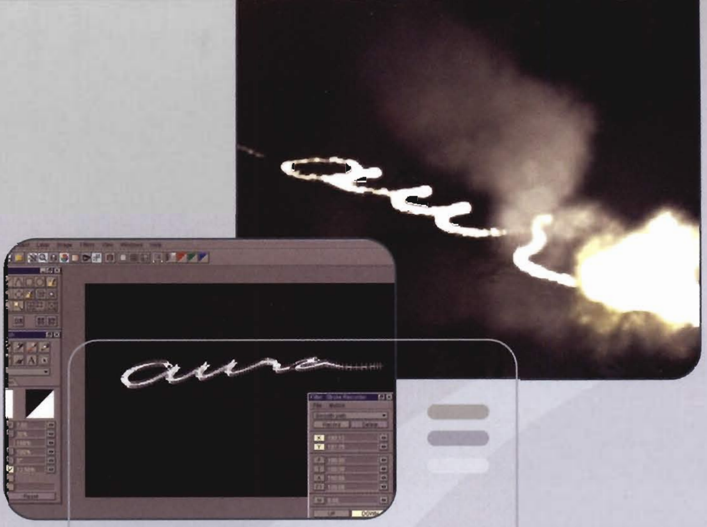

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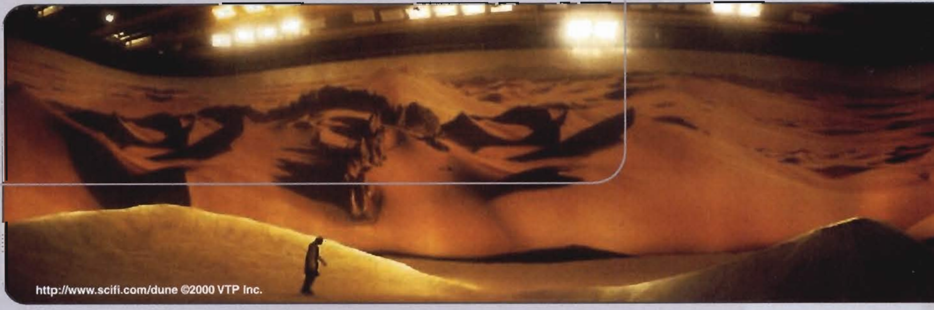

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THE THIRD MAN
3

LEE STRANAHAN

SHINING THE SPOTLIGHT .

Hello and welcome to *The Third Man*, where we'll investigate the world of third party products. In this column, I'll focus on the new valuable programs available today. More importantly, I'll present mini-tutorials that show how to make those products work for you. We'll cover third party plug-ins for LightWave, Video Toaster, and Aura. To begin, though, I want to be a little more philosophical.

Please allow me a couple of personal comments to start this column. I've been working with NewTek products for over ten years. I started the first Video Toaster magazine a decade ago, and in a strange way ***newtekpro*** is a distant grandchild of that publication. I've also hosted hundreds of seminars and dozens of instructional videos. First and foremost, I use NewTek products in my own work as a producer and director.

I've always been a big believer in tapping as deeply into the power of your tools as time will allow. I'm sure everyone reading this agrees. Still, I'm always amazed at the number of people who don't know about the incredible wealth of third party software out there.

I can think of a number of reasons why you might be in the dark about these products. First off, a lot of the third party companies who make the plug-ins and add-ons are small. Many times, they consist of just a programmer and maybe a few friends. If they don't have the marketing savvy or the resources to really explain what their software does, their message often doesn't reach their market. I will try to bridge that gap and inform you about some of the lesser known but worthwhile programs.

You might think some of the resistance is the cost of plug-ins, but the LightWave community is blessed with hundreds of free plug-ins. For instance, a lot of users don't seem to be familiar with TMProductions.com – the online home of programmer, Joe Angell – which houses a collection of extremely useful software, all yours for the taking.

Of Joe's plug-ins, one of my favorites is *Content Director.* If you ever want to switch LightWave's content directory, go download this plug-in, which is so simple to use. The plug-in displays a list of directories, and with one mouse click, you choose a new content directory, which sure beats typing in a long pathname. It also provides tools to edit the list.

> WHENEVER I JUDGE THIRD PARTY SOFTWARE, I ALWAYS ALWAYS ASK MYSELF, "WILL IT SAVE ME TIME?"

Plus, you can create an entire LightWave directory structure from scratch with one click. That means Content Director creates the "Objects," "Scenes," "Images" and other folders without all the typing. You can even customize the process. If you want a "Renders" folder, you can tell the program to automatically create it as well. If Joe's plug-ins seem like they were designed by a long-time LightWave user, well....guess. On Joe's site, you also can find other handy LightWave plug-ins like GridZoom, Mot-ify, and Nullify. Did I mention they are free?

So if cost is not the barrier to adding these products to your toolchest, what is? In some cases, I believe people are hesitant to acquire add-ons because they are worried that they won't be able to learn to use them. I mean, think about it – how many people out there are truly utilizing 100% of the power of a program like LightWave? Let's round it off to zero. LightWave is just so big and complex that pretty much every LightWave user I know feels like they don't really know the program that well. And, of course, by the time you learn new features, along comes a new revision of the program. You start to feel like George Jetson stuck on the endless treadmill.

(Side note: I'm convinced that the image from the end titles of *The Jetsons* is one of modern art's greatest symbols of man's condition in the Information Age. With a project deadline looming, who among us has not ignored fifty pieces of unread email and the constant chirping of the cell phone? Then you get an instant message from your client and you remember you haven't checked voice mail in a week. You just want to yell "Jane! Stop this crazy thing!" But I digress.)

So, what sane person would want MORE programs piled on top of the big stack of software they already have? No one, unless that program makes them more effective or efficient. Whenever I judge third party software, I always always ask myself, "will it save me time?" For most of us, time is a resource as valuable as money. Of course, time is money. If you can deliver a project ten hours faster, you've saved ten hours you can devote to other work. Or better yet, spend five hours on moneymaking jobs and spend the other five hours with your kids or snowboarding or reading *The Fountainhead* or doing something that doesn't involve sitting in front of a computer.

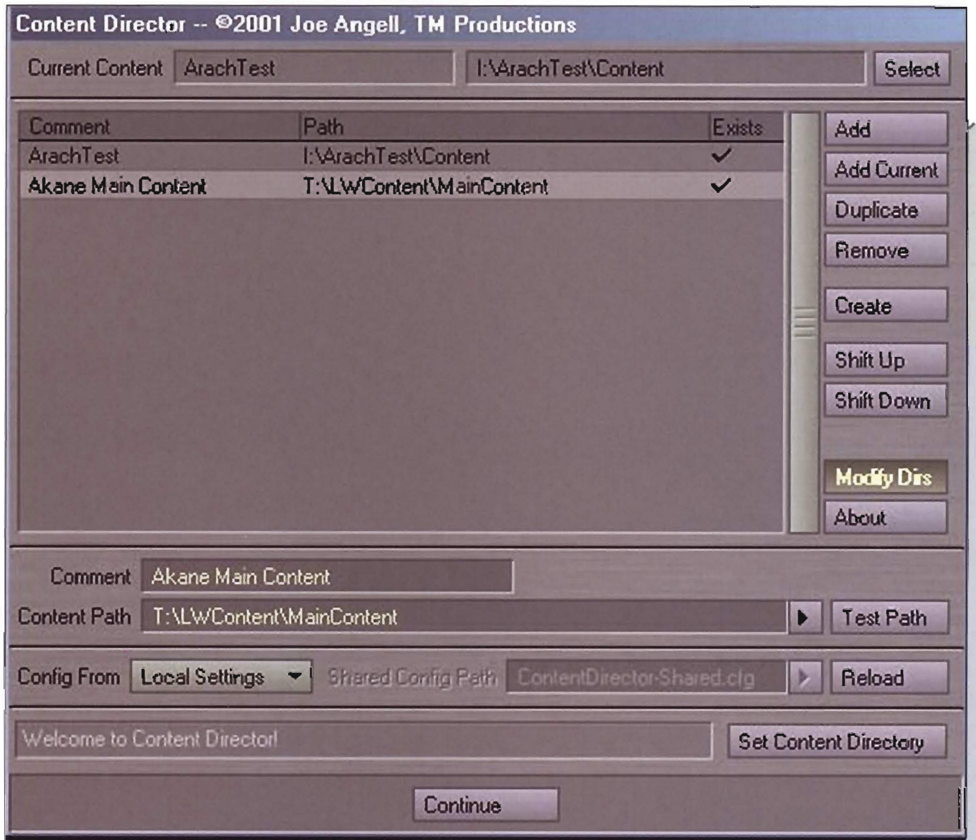
Plus, the time I'm saving would often be otherwise spent doing very boring work. For instance, I recently picked up a copy of Dynamic Reality's *Impact* v.2 plug-in, a rigid body dynamics program, which means it simulates gravity, collisions, mass, and other real-world characteristics.

I was working on a shot where I had about 20 dominos that needed to fall like...well, dominos. You know – one falls, knocks into another one, which knocks into another one, and so on. If I had to keyframe all that motion, I would have spent a very boring weekend. Instead, I set up my LightWave dominos and loaded *Impact* into the scene. In about two minutes, I was able to assign a certain weight to the dominos and indicate that they should collide with each other and the floor.

Then I dropped one domino, it hit the next one, which hit the next one, and so on. With one keyframe, the dominos were all colliding and bouncing and falling. *Impact* calculates the physics. In this example, the processing time was very fast – about a second per frame. One problem occurred when one domino missed another one and the chain stopped dead. Well, that's what happens when you simulate reality. I repositioned the domino, restarted *Impact* and the problem was solved. Net time lost was one minute. Then, I thought the move might look better if the dominos were falling slower, so I changed gravity. If you're a control freak, rejoice, *Impact* provides a gratifying assortment of adjustments.

This very, very cool plug-in saved me hours; and the results looked more realistic than I would have been able to achieve by hand. And that assessment is what I want you to say after reading my column. My whole approach will be solution oriented. We will focus on using third party software to get work done faster and better.

That's enough philosophy for any one column – next issue, look for mini tutorials and some quick news bits. One final note – I want this column to be as interactive as possible, so please send me any questions or suggestions at Lee@Stranahan.com.



Content Director -- ©2001 Joe Angell, TM Productions

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Akane Main Content	T:\LWContent\MainContent	✓

Comment: Akane Main Content

Content Path: T:\LWContent\MainContent

Config From: Local Settings

Shared Config Path: ContentDirector-Shared.cfg

Welcome to Content Director!

Content Director

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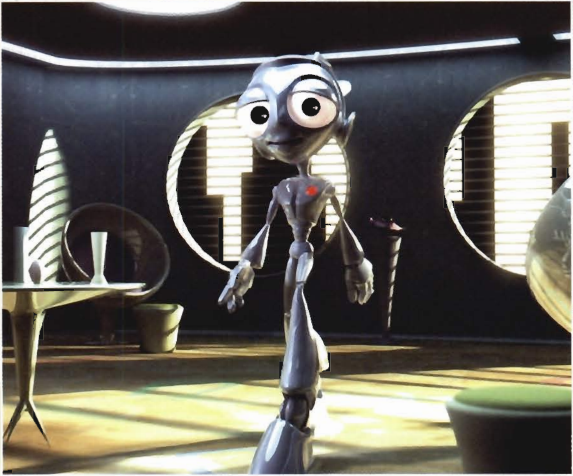

BOTS

Bots star Servo 3767, in his living room

MR. FREAK

The star of Meni's next film: *Mr. Freak*

Aristomenis Tsirbas, "Meni," was born in Montreal, Canada, where he studied fine art and film production. After several years as a graphic designer and film editor, he turned his attention to computer animation. In 1996, Meni moved to Los Angeles to work on visual effects for films such as *Titanic* and *Conspiracy Theory*. He quickly became a visual effects supervisor.

In 2000, Meni directed two back-to-back short films, *Mech Warrior 4* and *Ray Tracey in Full Tilt*, which opened last year's Electronic Theater at SIGGRAPH. He recently founded his own production company, "MeniThings," that has allowed him to concentrate exclusively on directing. Now living in San Francisco, Meni works directly with NewTek on LightWave development. He currently is animating his latest short film *Mr. Freak*.

Over the years working at visual effects studios, Meni became known for his wacky solutions to LightWave problems posed by his colleagues. In his column, "Meni Pro Tips and Tricks," debuting next issue, he will apply his off-kilter logic to resolving gnarly LightWave brainteasers submitted by readers. You can send your conundrums to meni@menithings.com.

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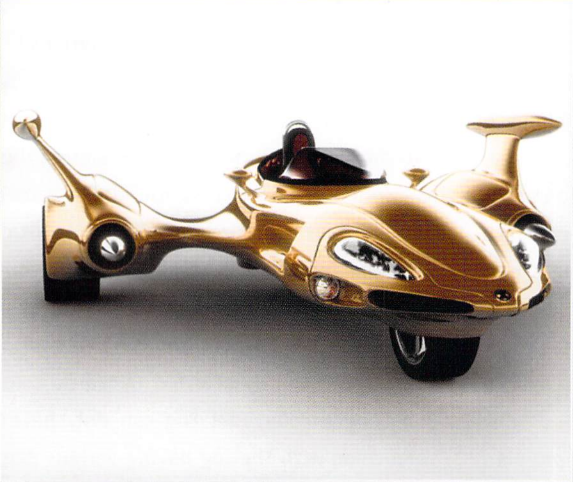
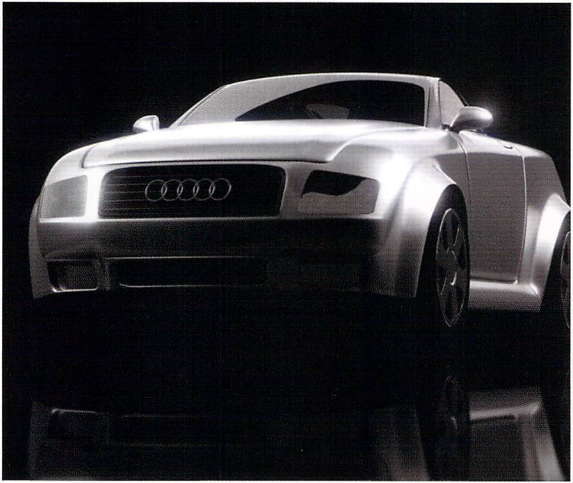


HOVERVETTE

Ray Tracey's transforming vehicle of choice



AUDI A5

Concept car

This article has additional online content.
www.newtekpro.com

MARCHING THROUGH THE FOG

LW_GROUND

LightWave 6 continues to surprise me. Even after almost a year of use, I still come across features I had not noticed before. The program contains so many new things that I swear a big handful of functions were scooped out of some alien software and backward engineered to work inside our favorite program. The alien technology theory would also explain the curious lack of significant documentation on some of the most interesting new tools.

The tool under scrutiny today can be found in the volumetric plug-in section of the Effects panel, the LW_GroundFog plug-in. You can apply the Ground Fog plug-in two different ways, depending on the need of the scene and your personal sense of adventure. In its most basic form, the Fast Fog option, a simple horizontal haze is generated, very much like a planar version of the Background Fog. In its more advanced mode, the Ray Marcher option, the Ground Fog behaves like a true volumetric effect.

PRO GOAL.
Explore some of the traditional and not so obvious uses of the LightWave [6] Ground Fog plug-in.

PRO TOOLS.
Ground Fog Plug-in
Texture Editor

Onward Through the Fog

On page 11.4 in the Volumetric section of the LightWave manual, you will find roughly half a page dedicated to explaining the workings of the Ground Fog plug-in. This meager section really does not give you enough information to use the plug-in, nor does it suggest possible applications. Through my own experimenting, I have been able to create both waving plains of grass and the burning fires of hell just by changing a few settings.

Using Ground Fog requires a little bit of pre-planning. As with most of the more powerful tools, one size does not fit all, and settings need to be adjusted on a case-by-case basis. To be successful, a deeper understanding of the settings is required than what is explained in the manual.

To get started, go to the Scene tab in Layout and click on the Volumetrics button. Click on the Add Volumetric and select the LW_GroungFog plug-in. Double click on the LW_GroundFog listing to bring up the menu for the Ground Fog.

Fast Fog vs. Ray Marcher

As stated earlier, Ground Fog comes in two flavors, Fast Fog and Ray Marcher. The Ground Fog setting, when activated, defaults to the Fast Fog mode. Fast Fog, as the name implies, is the quickest to render, but also has limited options.

Fast Fog renders the same type of fog effect as Backdrop Fog. But rather then rendering the fog as a spherical shell that surrounds the camera, it renders it as a horizontal plane. As with the Backdrop Fog, the Fast Fog will not give you volumetric light type effects, cast a shadow, or show up in reflective surfaces. You have the option of using the currently selected Backdrop color, or assigning a color. Fast Fog can only have one solid color, with the fog having various degrees of transparency. The Fast Fog has no diffuse value; the luminosity setting only illuminates it.

Click on the Render Type setting to change from Fast Fog to Ray Marcher. Ray Marcher has all the settings of the Fast Fog plus a few extra abilities. Ray Marcher is a true volumetric effect, much like a large flat shaft of a volumetric light or Hypervoxel. Ray Marcher will cast and receive shadows, and can have color textures applied to it. One of the biggest (and most surprising) drawbacks, other then the standard settings in the texture editor, no envelope options exist for changing the settings over time.

BY PATRIK BECK

Ray Marcher takes much longer to render then Fast Fog, but is comparable to a normal Hypervoxel type volumetric.

Common Settings

The top two sections of the Ground Fog menu panel are the same for both Fast Fog and Ray Marcher. The bottom third section concerns the render quality and texture, which is only active in the Ray Marcher mode.

The first section controls the position of the fog. The ground fog is basically an infinite horizontal plane, the Top and Bottom settings specify the Y coordinates of where the fog begins and ends.

The Falloff setting determines the thickness of the fog. A low falloff setting of 10% will give the fogbank an appearance of a near solid brick. A high falloff setting of 90% or greater will give the fog an even transparency gradient for almost the full thickness of the fog.

Nominal Distance affects the quality of the fog. Though not clearly explained in the manual, it sets a scale factor for rendering the fog. A good rule of thumb is to set Nominal Distance equal to the distance of the object of interest in the scene from the camera. If a head stone in the graveyard is 9 meters from the camera, start with the nominal distance at 9 meters, do a test render and adjust accordingly.

The second section controls the look of the fog. The Luminosity setting determines how much the fog is self-illuminated. With Fast Fog, the Luminosity setting is the only illumination the fog gets. With Ray Marcher, the luminosity value and the lights in the scene illuminate the fog. The Opacity setting adjusts the total amount of transparency for the fog, with lower values making the fog more transparent and values of 100% or greater making the fog more solid. The color of the fog is determined either by checking the Use Backdrop Color box, or by specifying a color in the color box.

The third section is only activated when the Render Type is changed from Fast Fog to Ray Marcher. The render quality setting has 5 levels, starting at Very Low and going to Very Good, (though in most cases there appears to be very little difference in either render time or image quality for the different settings.)

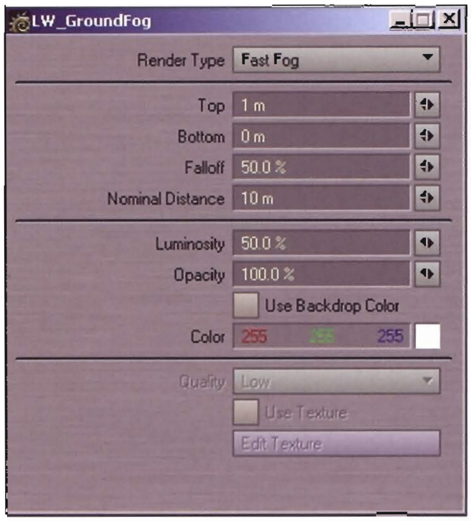
Clicking on the Edit Texture button, at the very bottom, brings up the standard Texture Editor panel. The texture applied here will affect both the color of the fog and areas of transparency. Both images and procedurals can be applied as textures.

Setting up a Scene

The example scene contains three objects, all about 1 meter inside a 4-meter room. The squares in the room are 0.25 meters in each dimension. The single default Distant light and the default Ambient light, set at 25%, illuminate the scene. By using a precisely scaled checkered pattern, you can easily gauge the size and affect of distance and falloff settings when you look at the rendered image.

(This particular scene has been set up to show how ground fog operates. Duplicating the scene is not important, just keep in mind that the subjects in the scene are roughly 1 meter in scale and about 6 meters from the camera. All the scenes in this tutorial have been posted to the *newtekpro* website.)

The LW_GroundFog plug-in has been applied to the scene. Double clicking on the GroundFog plug-in listing brings up the Ground Fog menu. Figure 1. These settings are used for both the Fast Fog and the Ray Marcher examples. The Camera is positioned slightly above and pointing down at the objects and the fog.



Render Type: Fast Fog
Top: 1 m
Bottom: 0 m
Falloff: 50.0 %
Nominal Distance: 10 m
Luminosity: 50.0 %
Opacity: 100.0 %
☐ Use Backdrop Color
Color: 255 255 255
Quality: Low
☐ Use Texture
Edit Texture

Figure 1.

Ground Fog Settings	Camera Position
Top. 1m	X. 0
Bottom. 0	Y. 1.8m
Falloff. 50%	Z. -4.2m
Nominal Distance. 10	H. 0
Luminosity. 50%	P. 16 degrees
Opacity. 100%	B. 0
Use Backdrop Color. off	
Color. 255, 255, 255	

The first pair of images shows the effects of using the Render Type of Fast Fog, one with the objects inside the box and one with the surrounding box removed. Figure 2 and Figure 3. Note that the fog is very evenly distributed and resolves into a hard solid line as it reaches the horizon. With these settings, the fog inside the box is much subtler.

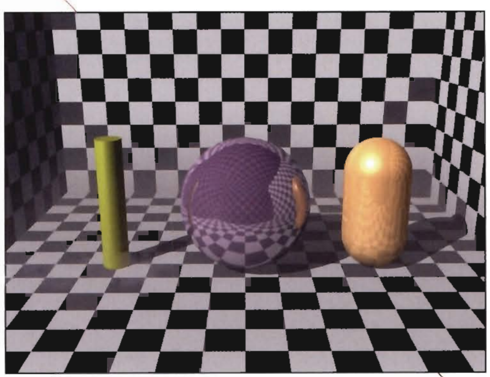


Figure 2.

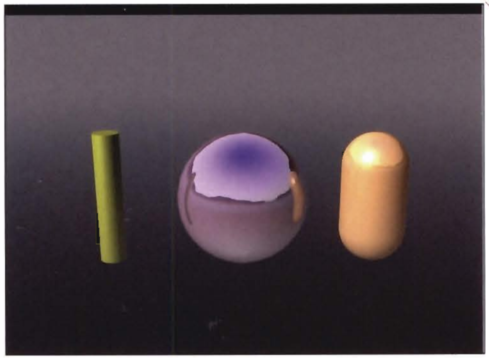


Figure 3.

In the next pair of images, the Ray Marcher render type was used. Figure 4 and Figure 5. Though it took much longer to render, the results are much more pleasing. The shadows of the objects can be seen falling through the fog. The fog appears to get thicker as it gets further from the camera. Even when the enclosing box is removed, the Ray Marcher ground fog gives the scene a very solid sense of a floor in the scene, though the harsh edge of the horizon line is even more pronounced at the top of the image.

Editing the Texture

When Ray Marcher is used, you have the option of applying a texture. First activate the Use Texture button, and then click on Edit Texture, which brings up the standard Texture Editor panel. You can apply textures to the Ray Marcher the same way as you would in the Surfaces Editor.

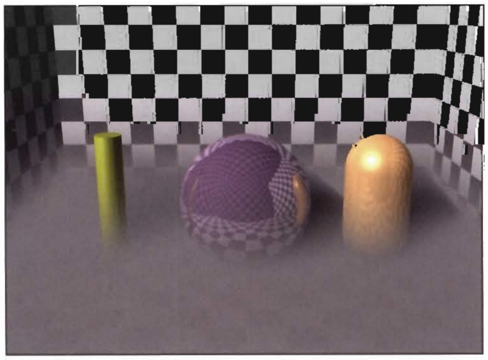


Figure 4.

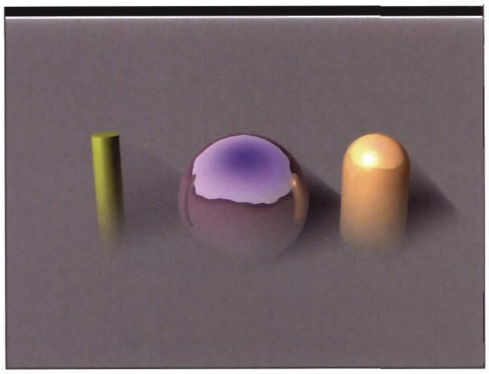


Figure 5.

In Figure 6, we can see the effects of applying a 1-meter checker procedural. The texture scale is applied as if World Coordinates are always turned on. While this texture graphically shows the function of applying textures to the fog, it is not particularly realistic. A Fractal Noise procedural, like Turbulence, Fractal Noise, or Dented, will result in a more convincing fog look.

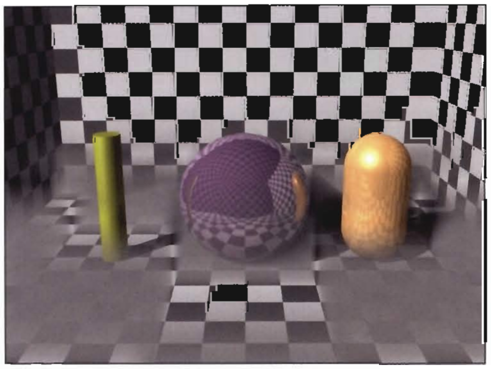
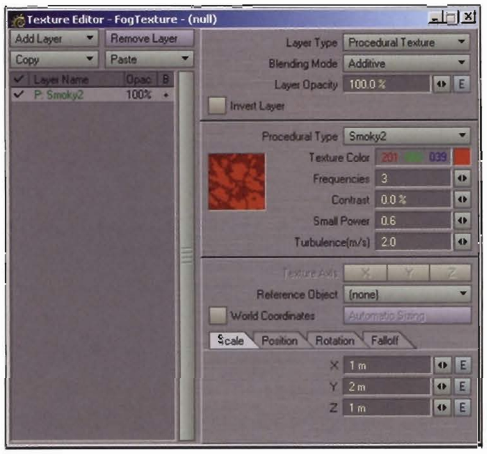


Figure 6.

Making Fire

Ground Fog follows the proud LightWave tradition of tools that can be tweaked to create unintended, and often, unimagined effects.

By making a few small adjustments to the above scene, the ground fog can be converted into a quite acceptable ground fire. A red Smokey2 texture can be used to create a rolling wispy flame effect. Figure 7.



Texture Editor - FogTexture - (null)

Layer Name	Opac
✓ P: Smoky2	100%

Layer Type: Procedural Texture
Blending Mode: Additive
Layer Opacity: 100.0 %
☐ Invert Layer
Procedural Type: Smoky2
Texture Color: 201 [illegible] 039
Frequencies: 3
Contrast: 0.0 %
Small Power: 0.6
Turbulence(m/s): 2.0
Reference Object: (none)
☐ World Coordinates
X: 1 m
Y: 2 m
Z: 1 m

Figure 7.

Ground Fog Settings	**Edit Texture**
Render Type. Ray Marcher	Layer Type. Procedural
Top. 1.5m	Blending Mode. Additive
Bottom. 0	Layer Opacity. 100%
Falloff. 65%	Procedural Type. Smokey2
Nominal Distance. 8m	Texture Color. 220, 060, 040
Luminosity. 75%	Frequencies. 3
Opacity. 100%	Contrast. 0%
Use Backdrop Color. Off	Small Power. 0.6
Color. 255, 255, 128	Turbulence. 2.0
Quality. Medium	Scale. X = 1m
Use Texture. On	Y = 1m
	Z = 1m

These settings will cause a fire type of effect for the ground fog. Figure 8. You can play with these settings to achieve your ideal conflagration. The Turbulence value of 2 in the Smokey2 procedural texture gives the texture an evolving motion. A higher Turbulence value will cause the flames to move faster. Give the texture a velocity on the Y-axis to move it upward.

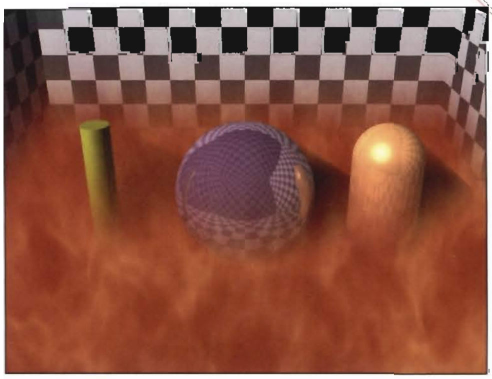


Figure 8.

Waving Grass

With surprisingly few changes in the settings, the wall of fire can be converted into a waving field of grass. What better character to recruit when creating a field of grass than the LightWave Cow object. (As you may have suspected, this entire article has been written for the sole purpose of justifying an appearance by the cow.) {Ed. Note: Of course. Patrik hales from Wisconsin.}

Start with a clear scene. Turn on Raytrace Shadows so that the objects will cast a shadow onto the grass. Load the Cow object from the Objects/Animals directory and keyframe it into this position:

X = 0, Y = 0, Z = 0
H = -205 degrees, P = 0, B = 0

Select the Camera and Keyframe it to this position

X = 0, Y = 2m, Z = -9m
H = 0, P = 3.75, B = 0

This puts the cow in the middle of the scene with the camera angled slightly down at it. Figure 9.

Under the Scene tab in Layout, click on the [Volumetrics] button to bring up the [Effects] menu. Click on [Add Volumetric] and select [LW_Ground Fog]. Double click on the Ground Fog listing to bring up the menu and enter these values:

Ground Fog Settings
Render Type. Ray Marcher
Top. 1m
Bottom. 0
Falloff. 50%
Nominal Distance. 10m
Luminosity. 50%
Opacity. 100%
Use Backdrop Color. Off
Color. 187, 245, 180
Quality. Medium
Use Texture. On

Edit Texture
Layer Type. Procedural
Blending Mode. Additive
Layer Opacity. 100%
Procedural Type. Smokey2
Texture Color. 000, 070, 000
Frequencies. 3
Contrast. 0%
Small Power. 0.5
Turbulence. 1.0
Scale. X = 500mm
Y = 2m
Z = 500mm

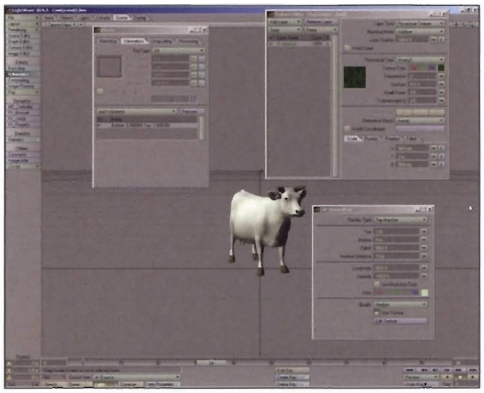


Figure 9.

Render a frame to see the cow in the grass. Figure 10. The texture has been scaled to be long and skinny to better resemble the look of grass. Rendering an animation will show that the Smokey2 texture makes the grass appear to move as if blown by a slight wind.

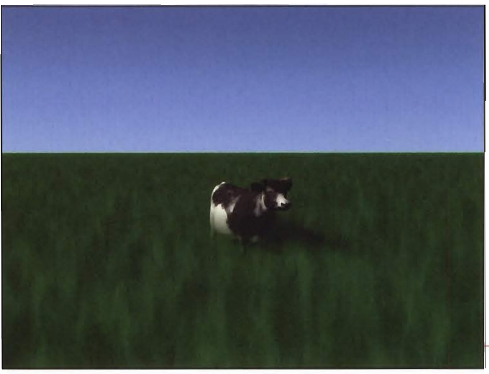


Figure 10.

Cloud Cover

In the first image of the article, we see clouds over a mountain. You should now have enough information on how Ground Fog works to set this up for your own mountain range. In this instance, the bottom of the Ray Marcher ground fog has been placed well above the position of the camera. The texture Puffy Clouds has been applied to the Ground fog layer and is doing an amazing job of creating, of all things, actual puffy clouds. The ground fog clouds are casting shadows as they move over the hills.

A Few Limitations

The Ground Fog plug-in contains a few quirks. The camera does not like being inside the band of fog. The camera should be placed higher then the Top setting, or below the Bottom setting. When the camera is placed in the center of the fog, the results are often unpredictable.

Speaking of camera placement, keep in mind that the fog layer is being treated as an infinite plane. If nothing stops it, like a building or a mountain, the fog will continue to the horizon's vanishing point, which can cause some very ugly artifacts at the horizon line, particularly when a texture is being used.

The fog generated by Fast Fog will not be acknowledged by ray tracing or shadow maps. Fog created by Ray Marcher will both cast and receive shadows. Ray Marcher will show up in ray traced reflections, but the reflection is often distorted and unusable. Both of the fog types seem to be incompatible with the standard Background fog settings.

Do not be discouraged by this list of limitations and the frustrating fact that you have no envelope settings. If the ground fog plug-in does not suit your needs, you can always do the same thing using Hypervoxel volumetrics. While Hypervoxels have none of the limitations that Ground Fog does, the Ground Fog plug-in is not nearly as intimidating and is a great quick solution to a common task.

Ohh Nooo!!!

It's Mr. Bill

Ohh Yesss!!! It's Walter Williams

By Bob Ketchum

Twenty-five years ago, a doe-eyed, dough-faced fellow with soup-bowl-cut yellow hair was capturing the hearts and humors of a loyal legion of *Saturday Night Live* viewers. In each new episode, Mr. Bill, our artless and hapless protagonist, would find himself in another dismembering predicament. Inevitably, we would hear that high-pitched, drawn out phrase that summed up his deep doo dilemma, "Ohh Nooo!!!"

As that plaintive cry became part of the American lexicon, Mr. Bill became an American icon. Since their first appearances in 1976, Mr. Bill and his co-stars — Sluggo, Mr. Hands, Spot, and Miss Sally — have achieved television legend status. Despite their success, Walter Williams, the man behind the mayhem, probably wouldn't be recognized walking down the street even if he was wearing a bright red shirt with Play-Dough buttons. And that's just the way Walter likes it.

In the last two and a half decades, Mr. Bill has tucked an impressive list of successes under his little white Play-Dough belt: *The Mr. Bill Show* book which rapidly climbed to the top of *The New York Times* bestseller list; television appearances with David Letterman, Jay Leno, Dick Clark, Bob Hope, and Shelly Duvall - to name just a few; regular host of USA-TV's *Night Flight;* guest correspondent on HBO's *Not Necessarily the News;* advertising campaigns with Lexus, Burger King, Pizza Hut and Ramada Inns; and he's even recorded a comedy album with Rich Little.

Now Williams is molding Mr. Bill into a star for the Digital Age.

The Sweet Smell of Success

Who would have thought a video that was half-jokingly submitted to a *Saturday Night Live* home movie contest would result in fame and fortune being bestowed upon a lump of clay? Mr. Bill's fabulous career may not surprise his many fans, but how all of this started might. Williams recalls, "I think it was, uh, the scent of Play-Dough. I was hooked on it at an early age. Actually, I sort of wish there was a Play-Dough scent of cologne."

Ordinarily, clay animation involves hours upon hours of slight adjustments and frame advancements, caught in a seemingly endless loop; but Williams cheated. "Actually, Mr. Bill never moved, so it was kind of a satire on bad animation. The funny thing is, most people think he did move, so I don't even dispute it anymore. I just say 'Yeah, it was a tough day... I knocked out ten frames.' " If Mr. Bill needed to move, that was usually a job for his trusty friend, Mr. Hands.

To avoid animating Mr. Bill, Williams developed a creative style of using cut-away shots. "Most times nothing really actually happened to Mr. Bill. It was all like an illusion." First there is the setup: Mr. Bill Goes to the Circus. Mr. Hands ties balloons around Mr. Bill's hand, severing his fingers. Cut to the balloons floating. Cut to a close-up of Mr. Bill's arm torn asunder and drifting up. "Ohh Nooo!!!"

But it's not as easy as it sounds. "I actually had to make a gigantic Mr. Bill head for one cut-away because my Super-8 camera had a minimum focus of, you know, like 2 yards or something." Even then, it still wasn't quite

It's me, Mr. Bill!

right. "So I had to make an even bigger head. But it was still out of focus. What are you going to do? Everyone thinks I was just trying to make cheap films - I was just doing the best I could."

Mi Amiga, with Love

The release of the Amiga computer in the mid-eighties motivated Williams to work in video as a more affordable alternative to film. In the beginning, his graphics tool of choice was *Deluxe Paint*. "Then I got (NewTek's) *DigiView* and that was innovative. That kind of digitizing was the only way of getting real-world objects into computers. The Amiga just kept evolving and I incorporated it into various jobs I had working on TV shows."

With the arrival of the Video Toaster and Flyer, Williams saved a bundle of money by shooting on Super VHS video and editing on the Amiga. "I edited the 20th Anniversary show and the *Ho Ho Nooo!!! It's Mr. Bill's Christmas Special* entirely on the Flyer. And it looked great!"

Williams felt that the Flyer's storyboard interface had "its limitations when placing sound effects and doing split edits. I still prefer the timeline for more precise editing. I'm thinking that Video Toaster 2.0 might be the best of both worlds, because you can use either the timeline editing or the storyboard approach."

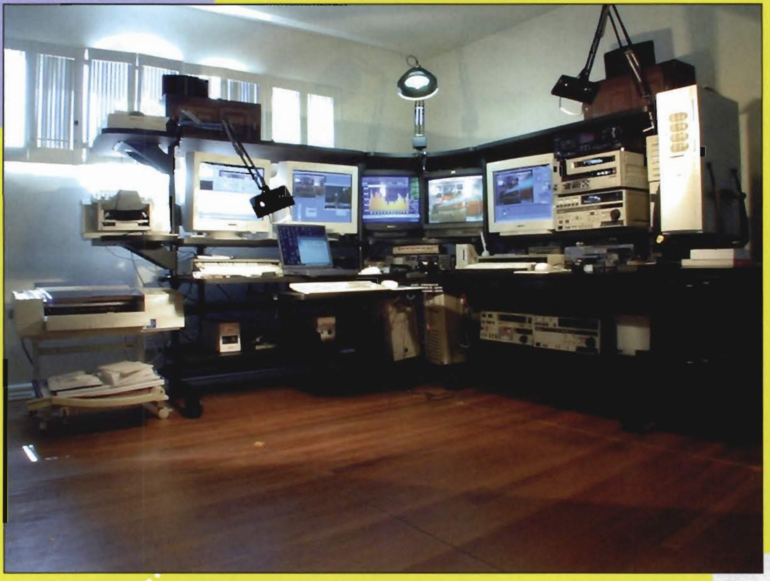
The process has continually evolved since the earliest days of shooting on Super-8 film. "The nice thing about it is that as I have been developing the idea about Mr. Bill's neighborhood, the supporting technology has been getting better and better." Tools such as LightWave have made the impossible possible. "Doing things like sending him to the Mir Space Station would have been difficult. Some things just couldn't be done with a real model."

Williams is equally ecstatic about the changes in editing technology. "I can really appreciate this stuff because I started by cutting Super-8 film. Then I went through 16mm Moviola and into linear video editing - which had all these restrictions like not being able to go back and insert. When the Flyer came along it was so great to get into non-linear. Now with the Video Toaster [1.0] I'm producing finished shows and DVDs. It's working really well.

"This is just another tool that eliminates a lot of the pain of the post-production process of film making, because that's like half the job. All this dealing with film is not only time consuming, but very expensive. If you can eliminate that part of the process - once I can edit without a cost - it allows me to put my resources into creative people or writing instead of, like, financing the yogurt machine at the post house."

As the technology continues to grow and offer new capabilities, Williams is quick to think of fun and exciting new applications for it. "I have a new show that I'm planning to produce once I get the streaming technology in place with the new Video Toaster 2.0. It's not connected to the Mr. Bill thing, but should be an entirely different type of internet show. So I'm anxiously awaiting the new Video Toaster software. I want to do a show just to be the first to have done that type of show. I know it's possible to pull it together now, but I'm willing to wait because I'm sure they will have it that much better and easier to use."

Chroma key applications are also very important in the work, so Williams anxiously awaits improvements on that front. "I have a (Play) HoloSet system and I just shot 35mm film with it on the new Mr. Bill Ramada Inns spots. Everyone was totally dubious of it. But the nice thing is, I could put Mr. Bill's car, which has all this chrome on it, right on the



Williams' equipment is set up on a rolling desk, so he can easily pull it out from the corner of the room when he needs to get behind it.

(chroma keying background) material and there's no blue spill from it. Using uncompressed files on the Video Toaster makes it very clean to work with. As that stuff gets easier, that'll be great."

The process begins with shooting on Betacam SP, Mini-DV, or film (telecined to Digital Beta), followed by transfer to the Video Toaster via an SDI interface. "The beauty of SDI is that I can go back and forth between the Toaster and Digital Betacam and I don't have to do anything to correct the color. It's virtually the same as the original footage." And by editing with uncompressed video, he maintains high quality throughout. "I have two large Medéa drives and four other 50 GB Seagate's, so storage is not a problem. It's like six or seven hours of uncompressed video; and if I need more, the prices are dropping so fast, I can just slap in another drive."

What's Old is New Again

The DVD release, *Ohh Nooo!!! Mr. Bill's Classics*, celebrates 25 years since the first appearances of Mr. Bill on *Saturday Night Live*. "I got all the original film out of the vault. The various dirt spots turned into white spots, so I had to have someone actually paint out the spots, frame by frame [using Aura]. The Video Toaster allowed me to do the ultimate spring cleaning of the entire film library, assemble it all, and get everything into the DVD format. I'm amazed at all the stuff I can do with it. It's great."

DVD has been a invaluable medium for Williams, for both reliving the past and as a home for all the latest and greatest adventures. Keep your eyes out for *Mr. Bill Does Vegas - Plus 25 All New Shorts* on DVD, as well.

Williams uses a Spruce DVDMaestro authoring system, with an MX-3000 MPEG hardware encoder, for his DVD mastering. It's a part of the process that he thoroughly enjoys. "I like DVD authoring. It's a lot easier than film production, which is the most painful of all."

Fun… and Games, Too

"I always wanted to create a high quality 3D character adventure game, where you're trying to get away. Different people can play different parts in the interactive game, and in a Trivial Pursuit kind of way, like 'Where did Mr. Bill meet Miss Sally?' As you get more correct answers, you gain access to all these extra Mr. Bill film clips that no one's ever seen before, and get bonus points and so forth." Danger lurks around every corner in Mr. Bill's neighborhood.

Though Williams' story began with a lucky break on a hugely popular television show, his great sense of humor, tremendous vision, and hard work explains his continued success. "Mr. Bill is like this long ongoing science project. The goal has always been to produce finished projects that people can see and enjoy. My experiments are my final works." You can visit www.mrbill.com to stay abreast of the future adventures of Mr. Bill and friends.

Williams also expresses his gratitude to those who have helped him. "I know Tim Jenison from way back. I ran into him at one of the earliest Amiga shows. He's like one of the most amazing people. I thank him for coming up with all this stuff every time I see him, because I really get so much use out of it. I've gone through all the other ways you can edit a film and it's all so very, very painful. This system allows me to be hands on and take the time I want to get it finished the way I want. I don't ever have to leave the house."

Which might explain why nobody recognizes him. ntp

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DRIVEN

PIXEL MAGIC

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Integrated into layout	Yes	No	Yes
React to deformations, including Motion Designer 2K	No	No	Yes
Use the polygons from an object as particles	No	No	Yes
The ability to kill particles in either part or all of scene	No	No	Yes
Interact with Impact v2	No	No	Yes, particles can affect impact objects
Force fields? Drag?	No, No	Yes, Yes	Yes, Yes
Support for weight maps and point groups	No	No	Yes, throughout the program
Envelopable by the graph editor	Yes, but only a few things	No	Yes, everything can be enveloped and controlled by channel modifiers
Can be controlled by expressions	Yes, but only a few things	No	Yes, everything can be tied to expressions
Gives the user God-like control over the particles	No	No	YES!!!

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SOUP'S ON

Video Toaster [2] Preview

By Dick De Jong

Video Toaster [2] is a simmering gumbo. For a long time, Chief chef, Andrew Cross, NewTek's lead engineer, has been adding ingredients one by one and patiently stirring the pot. In a few short days, NewTek will lift the lid on the VT [2] kettle and give its hungry loyal fans (and beta testers) a taste of their video production future.

Their ravenous anticipation is understandable. A decade ago, Tim Jenison and NewTek ignited the desktop video revolution with the original Video Toaster, an Amiga-based combination of hardware (featuring live video switching) and software (including switcher effects, video paint, character generation, and a nascent 3D animation program called LightWave). In 1994, NewTek released the Video Toaster Flyer, a video capture card that included an easy-to-use, storyboard-based, non-linear editing software.

In a testament to the Flyer's video quality and operational efficiency, many event videographers are still paying the bills with the productions they create on the Flyer. All the more impressive considering that in 1994, Commodore, the parent company of Amiga Computers, shuttered its doors. Amiga, the computer that the Toaster was designed around, disappeared; and Jenison and staff had to start from scratch.

Their efforts were rewarded in 1999 with the new Video Toaster that runs on Windows based PC's. More akin to the Flyer, version [1] of the new card captures video (in this incarnation, uncompressed video) and the software package includes in-sync's Speed Razor, a timeline based non-linear editor. But many Flyer users still are waiting to make the switch until a storyboard editor is completed.

VT [2] delivers many of the features that the wistful have been desiring since the Amiga days. Foremost on the list, [2] includes a storyboard editor. "The editor will not interface with Speed Razor," admits Andrew Cross. "But our editor has a timeline component as well. In the beginning, it will not have the acceptance that Speed Razor does, but that will change over time.

"The real cool thing we're doing is allowing you to switch between a storyboard and a timeline mode. You go in there and just throw things in and you will see the timeline being created in realtime. You can see it snapping things together and then you can do your layering in the timeline."

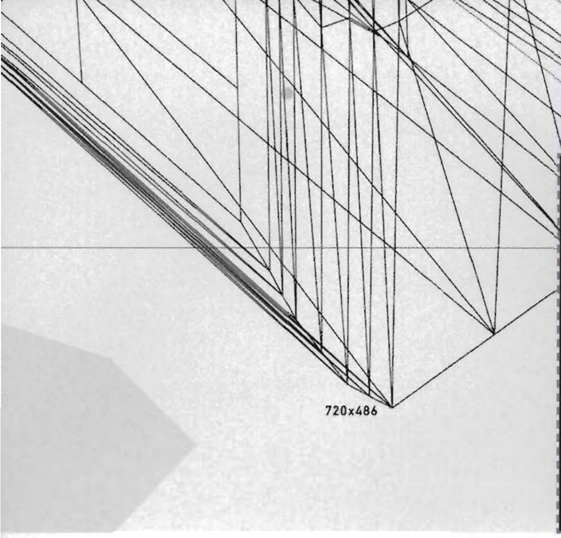
When you add programming wizardry with the increased processing power provided by today's fast computers, NewTek has been able to design features not possible on the Amiga, such as realtime slow motion playback. "The Editor actually allows you to stretch any clip to any length that you want and it will handle everything correctly (even strange multiples of the play speed)," Cross describes. "It even knows how to correct for the fielding artifacts that are typically caused by stretching projects up or down. In fact, it does all the de-fielding process completely transparently. Even if you are playing your project back at anything other than half speed, it does realtime 'time stretching' so that you do not see field artifacts caused by non-exact frame-rate playback. In fact you can even play the project backwards and it will correctly field and 'inverse-time-stretch' in realtime. You can even play backwards at 53% speed and it will do it right!"

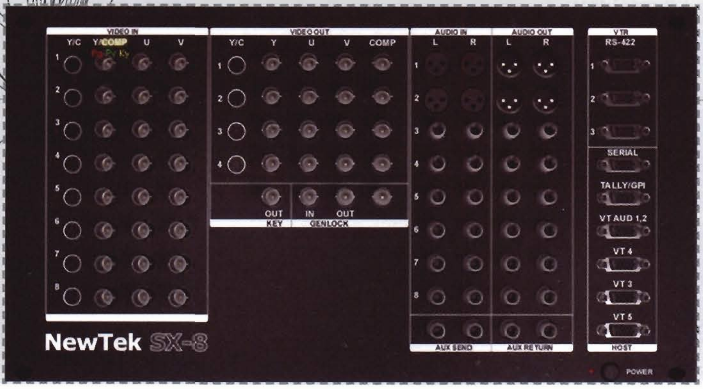
One of the strengths of VT [1] was the quality of the uncompressed video that it captured, but the feature had a few drawbacks. First, the RTV file format was proprietary. In [2], the card captures standard uncompressed AVI's that can be used in other programs such as Premiere or Combustion. But NewTek has completely opened up the gates, "We can work with any kind of AVI," says Cross about [2]. "We don't have our own proprietary codecs, we just work with pretty much any codec out there. It's a big thing, nobody else is doing that and it makes us much more flexible.

"Any file that you've got that will play in a computer will play without any modifications on the Toaster. We also have full DV support. We support uncompressed, we support DV. We can intermix any of them and that's a very good thing."

Then in a display of codec non-bias, Cross loaded an uncompressed AVI, a DV file, and an MPEG4 (downloaded from the Internet) and played them back without pause from one of [2]'s digital disk recorders. "The point is, we're not proprietary any more," states Cross. "We're working with everything, more than everybody else. People can use this system and expand it in any way they want. People will find ways that we never anticipated."

For native DV support, you will need a standard IEEE1394 (Firewire) card since encoding DV realtime is very CPU intensive. DV files can be played back on the storyboard in native compressed for-





NewTek's SX-8 router hardware supplies eight componet of twenty-four composite video signals that can be input into the live switcher without requiring TBC's or genlock-able cameras.

mat from the hard drives. Since VT [2] also supports RS422 playback, you can actually control a DV camera from within the Record panel as well. Therefore, you can input DV cameras onto the Switcher.

Because of the DV encoding requirements, you cannot edit a program on the Toaster and then feed a realtime DV signal through a Firewire cable out to your DV camera or deck. You would need to render the program to a DV file or feed the Toaster signal to a realtime DV encoding hardware solution. Of course, you can always record the program from the component or composite outputs on the Video Toaster card.

The Record panel allows you to capture video in a variety of formats. “We don't need to record full video resolution or full video frame rate any more,” Cross explains. “So we can capture 360 x 240 at 15 fps. Or you can capture realtime in another compressed format like JPEG. The middle ground would be to capture uncompressed at 360 x 240 and it would take up five megs per second.

“We can do progressive or interlaced capture. We do deinterlacing on the fly while we're recording. We can capture at 720 x 486 which is D1. We can also capture compressed audio, which is useful for streaming.” With the dual standard Video Toaster card, you can work in either NTSC or PAL formats. Since PAL runs at 25 frames per second, it has become popular with digital filmmakers who are transferring their productions to 24 fps film.

With VT [2], the audio inputs are now functional and audio can be interleaved with the video, which solves the audio sync problem some editors in VT [1] were encountering with long clips. If you purchased the higher end Antex or Lynx cards, they can still be used.

NewTek's SX-8 router hardware supplies eight component or twenty-four composite video signals that can be input into the live switcher. The router also provides eight pairs (2 XLR and 6 RCA) of stereo audio inputs.

Along with the over 500 digital video effects (sheep still falling), NewTek has packaged an amazing suite of video production tools. VT [2] is bulging with a 60 field-per-second waveform/vectorscope, two different chroma-keyers, a background generator (that produces multi-colored, non-banded screens), and a down-stream key.

The proc amp reflects the power of the features. Each input on the switcher can have separate proc amp controls, which can be memorized. Or adjustments can be set globally across all inputs. With the click of the right mouse button, Cross reveals the Advanced Settings panel. “With this, we allow you to adjust everything,” says Cross. “We allow you access to everything the board can do. If someone knows what they are doing, they can get exactly what they want. It's also a tech support issue, now we can say, ‘go into here, find this setting and change it to this.’” Luckily, defaults are stored and therefore, can be reverted with the click of a button.

Along with a powerful new character generator, NewTek has included Aura 2, its video paint pro-

buzz, buzz

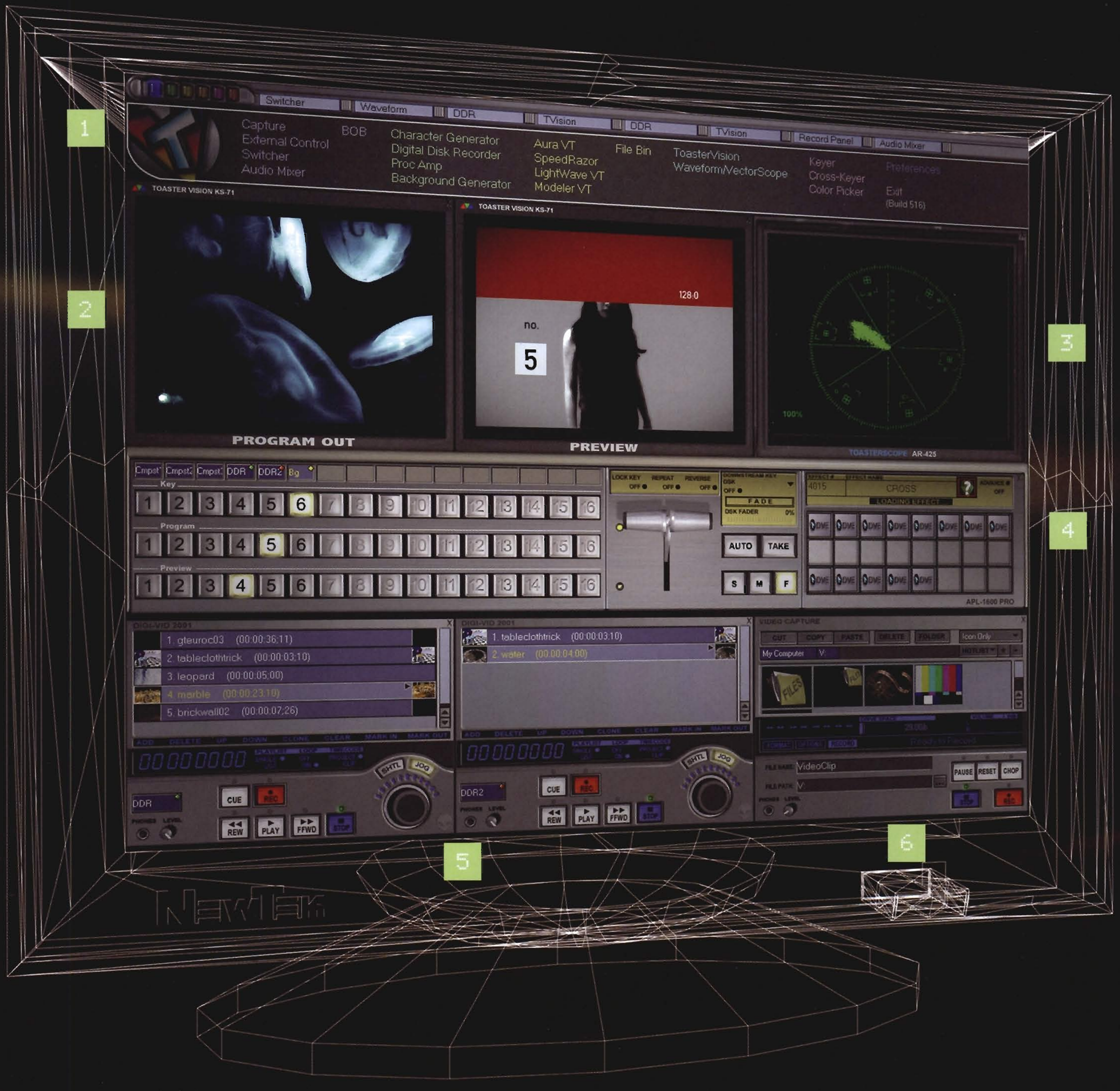
By Tim Jenison

Ask any computer programmer what a "death march" is. Don't bother; I'll tell you. A death march is that period of insane effort in the weeks or months before a major product ships. Caffeine is consumed in near-fatal doses. Clothes go unwashed. Email goes unanswered. Sleep goes unslept. "Ship or Die" is the battle cry.

We're in the throes of the Video Toaster [2] death march as I write this. In a way, it seems as though this one has lasted for years. VT [2] is the most ambitious project NewTek has ever attempted. It was really, really hard, but we know you'll like it.

Here at NewTek's "Alcatraz" development lab, everything is a little different. We designed our own office complex. All the walls are white markerboard material, so you can write anywhere. Instead of having square corners, the "offices" are hexagonal "cells." From above, they look like a giant beehive. The analogy doesn't stop there. Alcatraz is buzzing with activity day and night. Soon, the beekeeper will run in and grab the Video Toaster [2] and try to escape without being stung!

Tim Jenison, me; I just want you to make TV shows so I don't have to watch that other crap.


1
2
3
4
5
6
Switcher
Waveform
DDR
TVision
DDR
TVision
Record Panel
Audio Mixer
Capture
External Control
Switcher
Audio Mixer
BOB
Character Generator
Digital Disk Recorder
Proc Amp
Background Generator
Aura VT
SpeedRazor
LightWave VT
Modeler VT
File Bin
ToasterVision
Waveform/VectorScope
Keyer
Cross-Keyer
Color Picker
Preferences
Exit
(Build 516)
TOASTER VISION KS-71
PROGRAM OUT
PREVIEW
TOASTERSCOPE AR-425
Key
Program
Preview
AUTO
TAKE
CROSS
APL-1600 PRO
1. gteuroc03 (00:00:36:11)
2. tableclothtrick (00:00:03:10)
3. leopard (00:00:05:00)
4. marble (00:00:23:10)
5. brickwall02 (00:00:07:26)
1. tableclothtrick (00:00:03:10)
2. water (00:00:04:00)
VIDEO CAPTURE
VideoClip
PAUSE
RESET
CHOP
DDR
DDR2
CUE
REC
REW
PLAY
FFWD
STOP
SHTL
JOG
NewTek

TOASTER 2.0

1. Pulldown features menu, which can be used to customize up to six desktops.

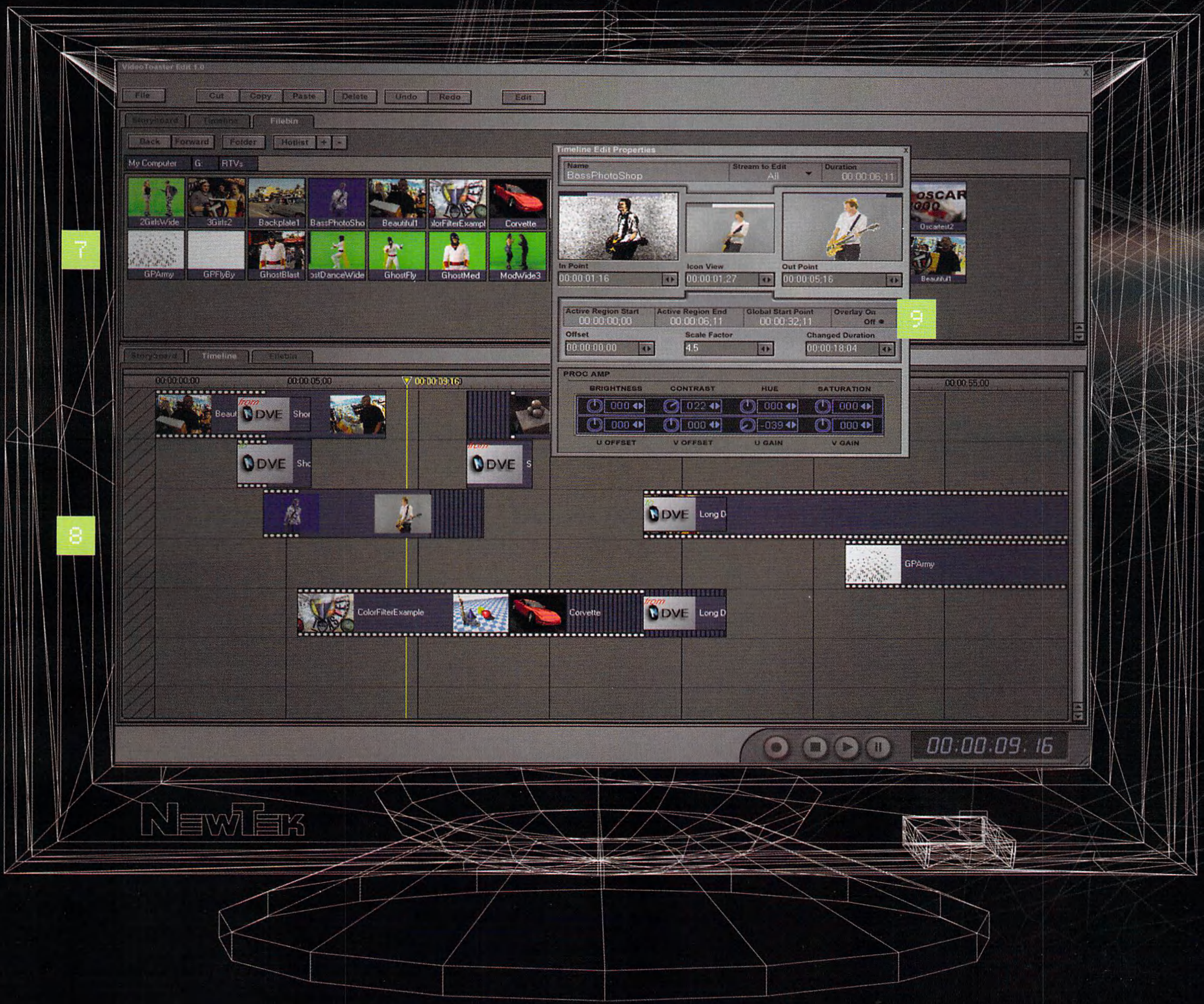
2. Two ToasterVision monitors showing Program Out and Preview from the Switcher panel.

3. Waveform/vectorscope, which can be set to a low refresh rate.

4. Configurable Switcher with up to 24 inputs. When you roll over a DVE crouton, it shows the effect.

5. Two Digital Disk Recorders, DDRs, which have been programmed as inputs on the Switcher.

6. Video Capture window with Pause (for Time Lapse and Stop Motion) and Chop (for multiple takes).


VideoToaster Edit 1.0
File
Cut
Copy
Paste
Delete
Undo
Redo
Edit
Storyboard
Timeline
Filebin
Back
Forward
Folder
Hotlist
My Computer
G:
RTVs
2GirlsWide
3Girls2
Backplate1
BassPhotoSho
Beautiful1
olorFilterExampl
Corvette
GPArmy
GPFlyBy
GhostBlast
ostDanceWide
GhostFly
GhostMed
ModWide3
Oscartest2
Beautiful1
7
9
8
DVE
Corvette
ColorFilterExample
GPArmy
Long D
00:00:55;00
00:00:09. 16
NEWTEK

Timeline Edit Properties

Name: BassPhotoShop
Stream to Edit: All
Duration: 00:00:06;11
In Point: 00:00:01:16
Icon View: 00:00:01:27
Out Point: 00:00:05:16
Active Region Start: 00:00:00;00
Active Region End: 00:00:06;11
Global Start Point: 00:00:32;11
Overlay On: Off
Offset: 00:00:00:00
Scale Factor: 4.5
Changed Duration: 00:00:18:04

PROC AMP

BRIGHTNESS	CONTRAST	HUE	SATURATION
000	022	000	000
000	000	-039	000
U OFFSET	V OFFSET	U GAIN	V GAIN

7 Storyboard.

8 Timeline.

9 Clip control panel with color correction controls.

team toaster

By Andrew Cross

Developing VT [2] has been a massive undertaking by many people for several years. In many ways, NewTek has been working towards Video Toaster [2] for its entire existence and the Amiga Toaster was the starting point.

With VT [2] just around the corner, this is a wonderful time to fill in the picture, providing glimpses into the overall equation that is Team Toaster.

Pat Brouillette designed and coordinated the development of the software-based realtime DVE and Switching. In addition, he wrote the low-level drivers that speak to the hardware. Also, Pat is one of the few VT [2] team members who has been with NewTek since the Video Toaster Flyer days - a seasoned veteran!

While on the subject of hardware, our lead engineers on the Toaster board are Kevin Rouviere and Charles Steinkuehler. Winston Ninh was the primary developer on the actual Switcher SX-8 breakout box.

Rick Pingry and James Killian, two key engineers who coordinated ToasterEdit from concept to existence, worked on the Timeline and Storyboard respectively. The design and architecture of the editor is quite amazing, which will be apparent to users once they experience its fluidity and speed.

Masaaki Konno is our in-house character generator (CG) guru who has managed and worked on every part of the CG. Before joining Team Toaster, Masaaki worked on some of the most expensive and powerful CG systems used throughout Asia.

Vidget, our MPEG encoder, and our file readers and writers in general are the baby of Gareth Shickles, (a.k.a. Vigo). Interestingly, he is one of the best orchid growers in the country, with his house looking more like a greenhouse than an abode!

One of the most striking aspects of VT [2] is its amazing user interface. This is the responsibility of our U.F.O. Department (short for User Friendliness Operations). It is a play off the long-standing NewTek slogan "Powered by Alien Technology." This department has the responsibility for making Video Toaster instantly useable by video professionals. Amiga Video Toaster editors already know "Aussie" who plays the critical role of constant "video producer reality-check" in everything we do. Argon Hennley is the lead artist or "skinner" who has coordinated the design of the gorgeous user-interface artwork.

Billy Pecora is the designer and coordinator for all the digital video effects (DVE's) that will ship with Video Toaster [2]. It has been a colossal job to design, render, and make the icons as well as document more than 500 different DVE's.

Stephanie Barton's work has a major impact on the user's experience of this product - perhaps more than anyone else. Stephanie single-handedly has written the Video Toaster [2] manual, something that constantly amazes me.

Jeremy Wiseman and his team have the arduous task of testing the "whole enchilada" and ensuring we have a product that behaves itself. While on the subject of people who choose to submit themselves to the pains of testing, I must mention Greg Roadruck, who has gone above and beyond in terms of pushing Video Toaster to its limits.

Paul Lara is the Video Toaster product manager (the Toaster Boaster) who ends up with the job of trying to coordinate marketing plans, boxes, press releases, reviews and brochures. Of all NewTek employees, Paul undoubtedly can eat the spiciest food. A true chili-head, Paul prefers his food "spiked" with habanero peppers. Since the hottest chilies can be hard to come by, Paul even grows his own.

gram, and a new version of LightWave based on the LW 6.5 engine called LightWave 3D Express. With the wealth of features, not surprisingly, NewTek has proudly revived their original tagline, "a TV studio-in-a-box," but has updated it with, "transmitter included," to reflect the VT [2]'s ability to encode any live or edited production and stream it realtime to the Internet.

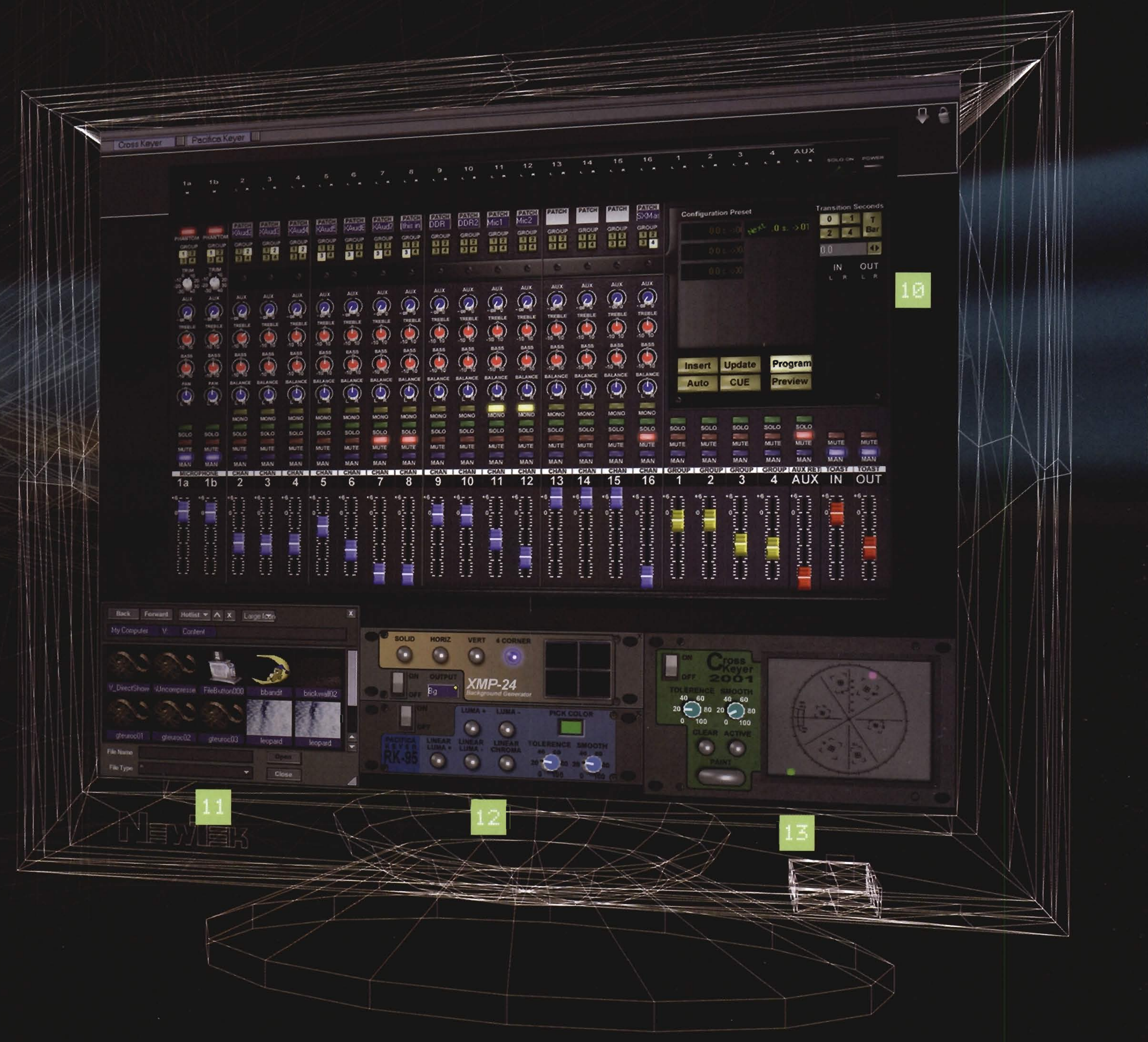
"We don't need a separate box to do the encoding," Cross says. "We don't need to pre-render the files, we can do a live switch. The Toaster does the MPEG4 compression for ASF in realtime and sends it out to the network card in realtime."

VT [2] runs on Windows2000 based computers (optimally a Pentium 4). "P4 is recommended more for memory bandwidth than CPU speed," Cross explains. "It has much increased memory bandwidth. Most of our code is handwritten in assembly language and is purely limited by how fast you can get data in and out of memory." Cross also recommends UltraSCSI 160 hard drives to work with uncompressed video and the 3D DVE's in realtime.

Cross sums up the task of creating VT [2], "To maintain such a huge product at the same time as worrying about having a nice UI, about having usability, about having it fast, having it all realtime - that's where the challenges lie. We're close, very close." (See Cross sidebar, "A Team Effort.")

We have included three pages of VT [2] interfaces that Michael "Aussie" Holten has laid out that highlight a few of the many [2] features. These screen shots are just examples of the multitude of interface configurations that you can design. In VT [2], you can customize up to six different desktops, which can be accessed with the click of a button.

Bam! ntp


Cross Keyer
Pacifica Keyer
Configuration Preset
Transition Seconds
Insert
Update
Program
Auto
CUE
Preview
10
Back
Forward
Hotlist
My Computer
Content
File Name
File Type
Open
Close
11
SOLID
HORIZ
VERT
4 CORNER
XMP-24
Background Generator
PICK COLOR
PACIFICA RK-95
12
Cross Keyer 2001
TOLERENCE
SMOOTH
CLEAR
ACTIVE
PAINT
13
NewTek

TOASTER 2.0

10 Audio mixer, full featured and programmable.

11 File directory window.

12 Multicolored background generator creates gradients without banding.

13 Pacifica keyer and Cross keyer, two different ways to key out a blue/green screen or other backgrounds.

This article has additional online content.
www.newtekpro.com

STEVEBOWIE

TO PRE-LOAD, OR NOT TO PRE-LOAD .

...that *is* the question

I find it hard to believe, but not everyone loves Aura 2 as much as I do (sniff!) The main stumbling block for some users is the time involved in pre-loading lengthy sequences. Pre-loading can certainly be a time consuming business, and can also tax system resources. For this reason, some feel Aura's practical use is restricted to projects shorter than 10 seconds or so.

I've been intending to devote a little space to this matter for some time now.

I won't deny that lengthy compositing operations may at times be performed more quickly and easily in a dedicated compositing application — Aura users who are also Toaster owners have the option of turning to Speed Razor for many such projects. It's clear to me, though, that Aura is more capable in this arena than many suspect. Especially for the artist whose access to other tools may be limited, I'd like to suggest some techniques for handling longer projects within Aura.

The question not everyone has considered is, "What happens if I choose not to pre-load?"

"Red Layer at Night, Artist's Delight..."

A new Aura user could easily fail to notice that he has some choice in this matter. Aura 2 offers a small checkbox near the bottom of the file sequence requester allowing "PreLoad" to be toggled on and off. Loading a layer with PreLoad off is instantaneous regardless of its duration! However, this doesn't solve all our problems with a single click. Some special conditions apply to these layers. As a reminder of its special status, such a layer will appear as a red strip on Aura's timeline ("Layer panel," for the purists.)

Authors note: I really don't feel like typing "non-pre-loaded layer" sixty or more times in this article (not to mention that double-hyphenation looks silly!) Henceforth, we will from now 'til eternity refer to such sequences simply as "Red Layers." Deal with it.

In Aura version 1 and AuraVT, loading a sequence from the File menu automatically pre-loads it. Still, a way exists to use an animation or video sequence in those versions without pre-loading. The trick is to load it as a "Background Sequence", **Figure 1.** (Thankfully, background layers also show up in red, allowing me to stick to my self-proclaimed naming convention.) In all versions, one thing you'll notice immediately is that it's impossible to select a Red Layer. Obviously then, you can't paint on it. Still, even allowing for differences in Aura versions, Red Layers serve many purposes.

The term "Background Layer" may have given the impression that this layer is only for reference purposes. Not so! Even given the limitations imposed by Aura v.1 & AuraVT (I'll call these "legacy versions" after this), Red Layers allow a number of useful functions.

Let's consider a small example. I'll number the steps so I can refer back to them.

1 – Load a frame sequence into Red Layer in any version of Aura. It can be long or short - just use whatever you have at hand - and make sure you have adequate hard drive space for what follows. (I loaded a video sequence two and a half minutes long ... click.)

1A – Aura legacy version users will have an extra step here: click on an empty "normal" layer and stretch it, so it ends at the last frame of the Red Layer. You don't need to make it into an anim layer, or to select all the frames.

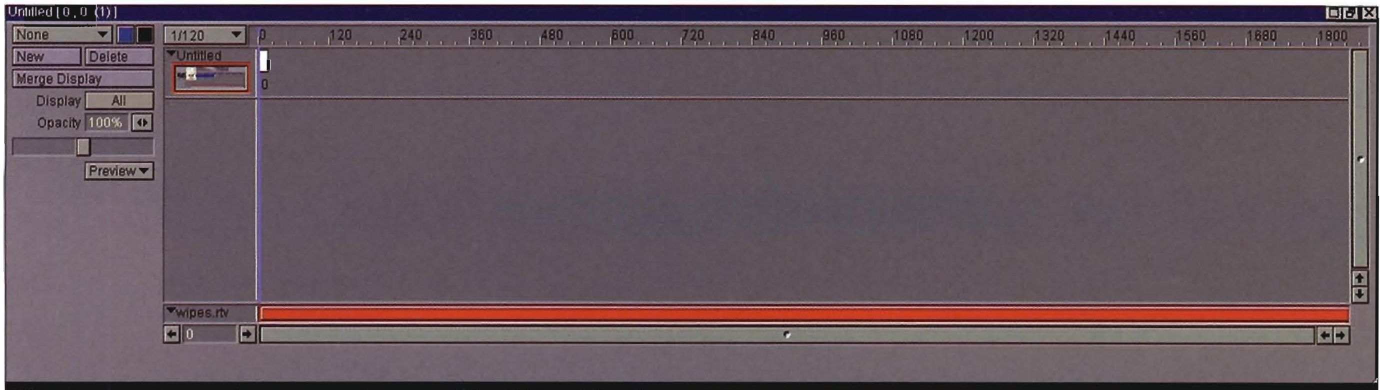
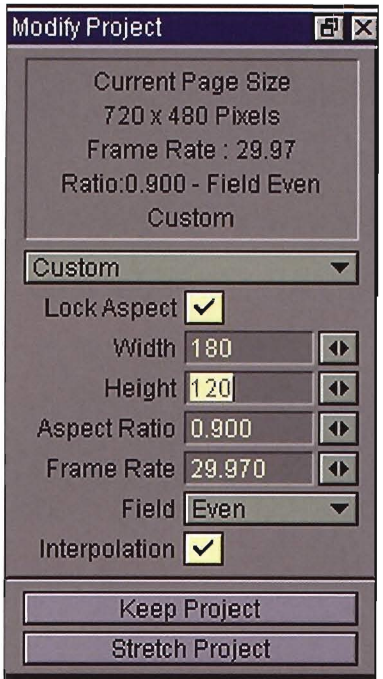


Figure 1 . Background sequences in Aura - "the thin red line."



Modify Project

Current Page Size
720 x 480 Pixels
Frame Rate : 29.97
Ratio:0.900 - Field Even
Custom

Custom
Lock Aspect ☑
Width 180
Height 120
Aspect Ratio 0.900
Frame Rate 29.970
Field Even
Interpolation ☑

Figure 2 . Modifying Project settings to scale a Red Layer.

2 – In Aura 2, go to the Project menu, and choose Modify Project. Change the project resolution to something much smaller (say, 180 X 120) in the requester that appears, **Figure 2.** In legacy versions, select the Edit menu point named Project Size and do the same thing.

Voilá – the sequence is scaled down instantly, without pre-loading. Length is of no consequence!

3 – Make sure your timeline display is set to All (not Current).

4 – Select a suitable file format as a **File/Mode** selection. An anim format like AVI or DEEP will do nicely. Choose **File/Export/Sequence**, assign a filename, and continue.

Neat, huh? The only significant time spent in the whole process is that taken to write the file to the hard drive! A point of interest: our steps in different versions diverged back at number 1A above because Aura 2 defaults to saving the entire project as a sequence when asked, while legacy versions need to be "nudged" into doing so.

Though frame selections in Red Layers aren't directly permitted, we *can* use another layer to control what Aura processes, including material in the Red Layer(s). In legacy versions, we can limit the output to a designated range of frames by stretching the regular layer appropriately, and positioning it over the desired frames. In Aura 2, the same thing is accomplished by sliding an empty layer (above or below the Red Layer, doesn't matter which) to the area of interest, and selecting just the frames we're interested in.

Painting in the Red Zone

O.K., we resized a Red Layer... that was cool. We still can't paint on a Red Layer, though – can we?

TRY THIS:
1 – Load a nice long Red Layer.
2 – Create or move an empty layer above it.
3 – For the sake of this exercise, make the empty layer 30 frames long.
4 – Use Aura to put a nice title (or paint some shapes) on the empty layer.
5 – Add a drop shadow, placing it in a different layer (just showing off here!).
6 – Select the 30 frames in any layer.
7 – Make sure your timeline display is set to All (not Current).
8 – Export the sequence as before.

Hey, how about that – for all intents and purposes, we just painted on a Red Layer. True, not all paint modes will work this way. Yet, a large number of common painting functions can in fact be performed without pre-loading. We'll see later that Aura 2 gives us more flexibility in this respect.

Thinking further about the example above, we realize that we also composited two standard layers with a Red Layer, **Figure 3.** Red Layers can be included in the output in all versions of Aura, and we can use this ability for many operations. Upper layers can be used to build CG sequences, adding fades, wipes, keyframed motions, and so on.

Likewise we can use standard layers to add "lower third" elements to Red Layers, or we can partially mask a Red Layer using semi-transparent upper layers with texture and/or color. Transparent "windows" in upper layers can reveal just part of the Red Layer. We can then play back realtime ("no wait") previews of the whole build, adjust the timing of various elements, then "pour them" onto a long Red Layer in one action – all with no pre-loading!

Speaking of timing, it's worth mentioning another aspect of the Red Layer that isn't immediately obvious in legacy versions: you can move it temporally. You can't select a Red Layer in the normal manner, but you can grab it with the mouse and drag it elsewhere on the timeline.

Aura 2 Advantages (Multi-Layer Compositing in Red)

The Simple Blend

Aura 2 is not limited to a single Red Layer; you can have as many as you like, which allows us a lot of possibilities. If you have Aura 2, try the following:

Load two different Red Layers of about the same duration. It doesn't matter what you use. For the samples accompanying this article I used the American Flag clip (an .rtv file that ships with the Toaster) for my upper Red Layer because its brilliant colors work well later on in this example. However, I also tested all the techniques discussed using a two minute long video clip without incident.

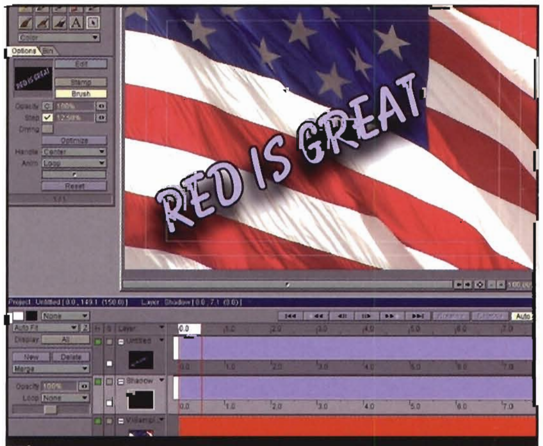


Figure 3 . "Painting" on a Red Layer...

"What good does loading two Red Layers do?" you ask. "I can't see the lower one anyway. The upper layer is 100% opaque and there's no way to reduce it!" Are you sure? Since you can't directly select the Red Layer, it may seem that way — but appearances can be deceiving! Try right clicking on the red strip of the upper layer. In the pop-up menu that appears, select the entry that says "Opacity (100%)." A small requester with an Opacity mini-slider will be presented.

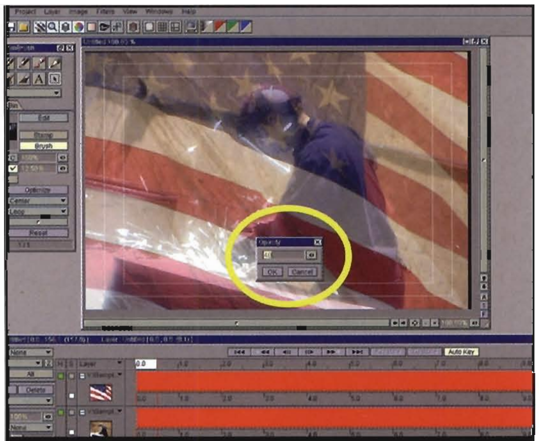


Figure 4 . Blending 2 Red Layers in Aura 2

Set that to 40%. Yee-hah! Now we're cooking! We can blend several Red Layers this way, with instant feedback, **Figure 4.**

Complex Comps with Red Layers

It gets better yet. Create an empty Image layer above the two Red Layers (you can make it the same length they are, or simply turn on "Loop" in the Layers panel.) If it isn't already visible, open the Tool panel. Click on the Fill tool (paint bucket) in Aura's Main Panel. The tool panel will switch to reveal the Filling Shape option panel. Click on the Gradient button, to turn it on. Right-click on the gradient display band just beneath that button to raise the Gradient settings panel. Using the cycle switch at the top left of this panel, select the "Red to Blue" preset, and close the panel.

Back in the Filling Shape option panel, continue by choosing the leftmost gradient style button, which is "linear." Now, right-click on the Papers button at the top of Aura's screen to open the Papers requester. In that panel, select "paper02" as the current paper, and set the "Hardness" mini-slider to 40%.

With all those settings in place, let's fill the empty layer with a gradient. Left-click anywhere in the image window and you'll see a tiny checkerboard pattern appear, denoting the area about to be filled. Complete the fill by clicking and holding the left button in the upper left corner of the image, then dragging all the way to the lower right before letting go. That should result in a nice smooth, semi transparent and somewhat-striated gradient.

Let's accentuate the texture a bit: open the **Filters>Spare Related>Bump** requester. Set the Source switch to "Paper," Depth to 40, and Smooth to 5. Click Apply Filter, completing our textured overlay. You can close the Bump panel at this point.

Knock the opacity of the overlay layer down to taste (70% worked nicely for me). You can see that we've got a nice looking composite going on to which we can add yet more layers, perhaps including some animated CG elements. To finish up, simply select Merge (Visible or All) using the cycle menu at the left of the Layers panel. If you don't like the result, simply undo it and tweak a few things! Afterward, disable the Papers mode.

O.K., we've got the ability to blend long layers without pre-loading. But what if I want to use some of Aura 2's other compositing modes – like Add, Tint, or Multiply? Not a problem!

Using the same setup as before (you should be able to simply "Undo" back to the previous state) reset the Opacity of the uppermost Red Layer to 100%. Even though clicking on that layer's icon at the left end of the Layers panel doesn't appear to select it, drag it down on top of the second Red Layer's icon anyway. Whoa! The compositing mode selector appears!

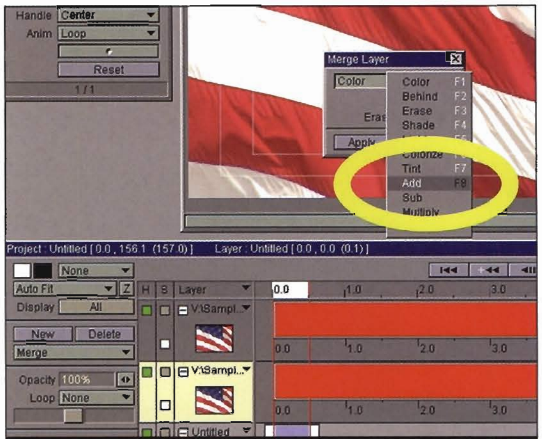


Figure 5 . Aura 2 permits a variety of compositing modes

Choose "Add", **Figure 5**, and the two Red Layers will be merged using additive mode. (The other modes all work, too!) The result looks pretty cool, but may be a bit overblown for video. Let's tone it down a bit, and add a little more interest by dropping the textured gradient layer on it using Subtract mode. (This worked out really nicely here, **Figure 6.** I'll try to remember to upload a sample animation to the ***newtekpro*** website before this issue goes to press.)

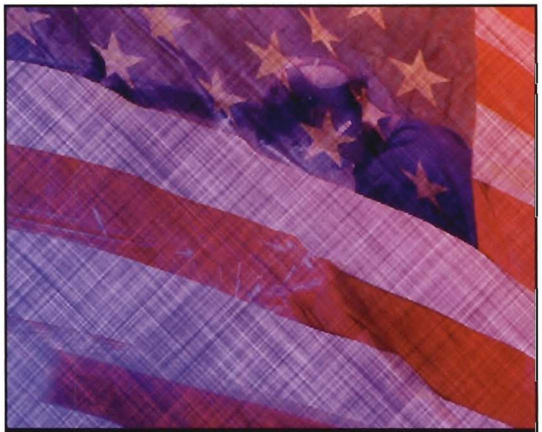


Figure 6 . A more complex Red Layer composite

Note that whereas in legacy versions we were restricted as to the sort of painting operations we could do (since there is no way to have our painted layer "interact" with the Red Layer). In Aura 2 we do have some options. We can mimic many of the usual paint functions using compositing modes in place of paint modes (the exceptions are the Special brush and image processing modes like Sharpen, Emboss, etc.).

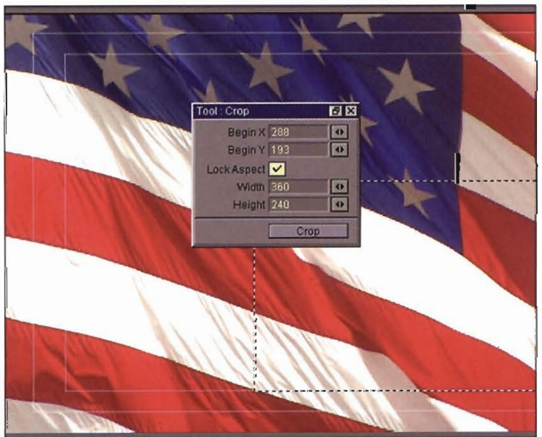
Added control over the effect the paint has on the Red Layer(s) for modes like Shade or Tint is achieved by adjusting the

Opacity of the standard layer beforehand. This step is similar to adjusting brush Power when painting on standard layers.

Aren't Red Layers a PIP!

Can animbrush operations be performed on Red Layers? No, not directly. However, using Aura 2, a Red Layer can easily be converted into an animbrush, which then can be manipulated in the usual fashion using the Brush edit functions like rotate, etc. Why bother, since you could simply load the anim file or file sequence as an animbrush in the first place? Good question: let's consider some practical applications:

Suppose you have a long sequence for use as a picture-in-picture (PIP) element. For instance, you may need to add a PIP of someone "signing" the narration track, for the benefit of hearing-impaired viewers. As mentioned earlier, you might simply do this in Speed Razor. Or, if you have decided on a fixed resolution for the PIP, you could do the scaling in Vidget, then load the sequence into Aura as an animbrush. This step would remove any concern about taxing system resources. You could finish up by painting or keyframing the animbrush into an empty layer above the (lengthy) main sequence as mentioned previously.



Begin X 288
Begin Y 193
Lock Aspect ☑
Width 360
Height 240

Figure 7 . Using Crop to compose a Red Layer PIP

Perhaps though, you want to build your project more interactively. You want to re-size the PIP visually and add some CG elements at the same time. You might also want to use Aura's brush opacity mapping to give the PIP a soft outline. The instant scaling trick for Red Layers (with which we began our discussion) would permit us to reduce the target layer for saving as an animbrush, but that really offers no advantage over Vidget. Instead, let's use the Crop tool (of all things!)

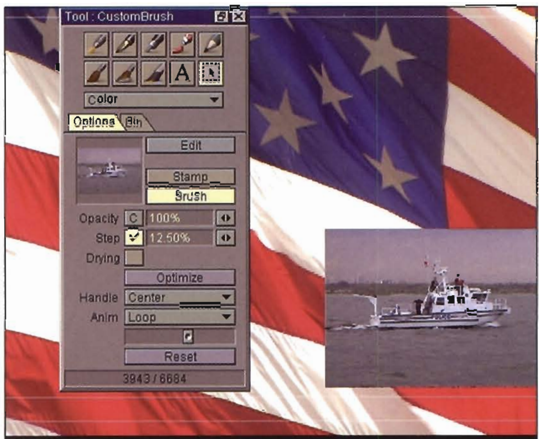
Begin by loading the main background layer as a Red Layer. Use the Crop tool to decide how big the PIP should be, **Figure 7.** When you have the Crop lines set where you like, load the PIP sequence as a Red Layer *above the main background layer.* Applying Crop at this point will instantly open a new project with the PIP correctly scaled – not cropped! Delete all the irrelevant layers from the cropped project, and pick up the project as an animbrush.

In this case, we need to do an extra step since you can't directly select a Red Layer, from which to pick a brush. So, convert the "cropped" Red Layer to a pre-loaded layer, using the Layer menu item "Change to preload layer." Afterward, pick up the animbrush and close that project, freeing up memory. Your PIP animbrush will be retained for use in the original project, **Figure 8.**

There are several advantages to this method. Picking up a long animbrush at full resolution would likely have demanded more system resources than you have.

(System resource management can be pivotal when dealing with long sequences. Animbrushes cannot be dealt with "virtually." Converting very long Red Layers to an animbrush can suck up a lot of RAM, both real and that "paged" to the hard drive. When animbrush lengths are very long, Toaster users with minimal RAM systems may need to temporarily sidestep in-Sync's recommendation on the maximum Windows page file size for Speed Razor use.)

Creating an animbrush from the reduced-size PIP layer was much less demanding, and much faster. Using Crop, we were able to preview and interactively scale the PIP outline against the intended backdrop. Too, we did not have to close the original project to convert the Red Layer to an animbrush.



Color
Opacity C 100%
Step ☑ 12.50%
Drying ☐
Handle Center
Anim Loop
3943 / 6684

Figure 8 . Need about an animbrush 2 minutes long?

image Processing without Pre-Loading?

By now, I hope you're getting the hang of it. Aura 2 can handle long sequences, although in current versions it requires a little more poking and prodding than it might in a more traditional compositor. "Wait a minute..." you're thinking, "what about image processing Red Layers, applying convolutions, color adjustments, filters, and the like?" It's true; Aura does not offer a mechanism to apply these processes to a Red Layer. You think you've got me this time, don't you ... but wait! Aura may lack such facility, but it does offer us the ability to build functions for ourselves using Aura's native scripting language, George.

Never one to duck a challenge, I wrote "Freddie.grg" to handle this one. This script is named in honor of the beloved Red Skelton character "Freddie the Freeloader," for obvious reasons. Freddie arose out of my experiments to solve a problem someone raised last winter on the Toaster mailing list (at www.yahoogroups.com. The archive is available from the "Aura Insider" pages on the ***newtekpro*** website.

Freddie is effectively a batch application, similar in some respects to Visual Inspirations' "Batch Factory" plug-in. Batch

Factory allows you to designate different George scripts to be run on each of up to 20 Aura layers. Freddie handles just one script at a time, applying it to the entire project. However, "he" has one little edge – Freddie can handle Red Layers irrespective of length!

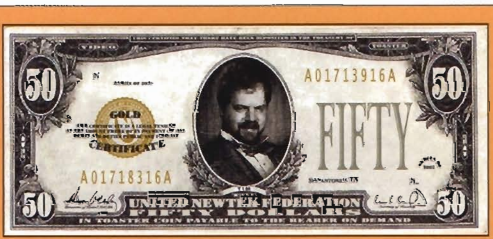
To use Freddie, you need a "subscript." Writing a subscript is quite easy, and may serve to give you an introduction to script writing. Several are included in the archive as samples. Some are quite simple, consisting basically of a single line of George instructions. All you really need in a subscript is the George command you wish to be executed for each frame. For example, to apply a negative filter to a layer using Freddie, the subscript needs to contain only the following line:

```
tv_filter ColorOp.dll 0 0 MyWidth MyHeight
'255-r 255-g 255-b a'
```

The "tv_filter ColorOp.dll" part tells Aura you want to use its color filter – the same one you would access using the menu selection **Filters/Color/Color Factory.** "0 0 MyWidth MyHeight" tells Aura to process the entire image, from the upper left corner (0,0) to the bottom right. Freddie measures the project for you, and stores the values in variables named MyWidth and MyHeight. Finally, the numeric entries are the values you would have supplied to the Color Factory panel in Aura to perform a negative operation. (Using George commands is discussed at more length in the Aura manual.)

Scripts can be more complex if desired. Freddie handles the loading and advancing of frames, as well as a lot of other functions. Chances are good that if Aura will do it, a subscript can be created to automate the process, and Freddie can run that script on a Red Layer. Unlike ordinary George scripts, it's not necessary to include all the usual "params" stuff, etc., at the beginning. This same usage is employed by Batch Factory macros, hence many of those macros (which can be created easily with VI's "George Generator" plug-in) work just fine with Freddie. Regrettably, Freddie does not support legacy versions of Aura.

Time is indeed of the essence, in Aura as elsewhere. We began this article by bastardizing poor Hamlet's question, "To be, or not to be... " His soliloquy continues "For who would bear the whips and scorns of time?" Judicious use of the oft-overlooked Red Layer can greatly reduce the flaying we take in pursuit of our craft, and perhaps open up some possibilities not previously contemplated. Until next issue, keep those mousies rollin' – we'll be back soon, with some fresh Aura insights!



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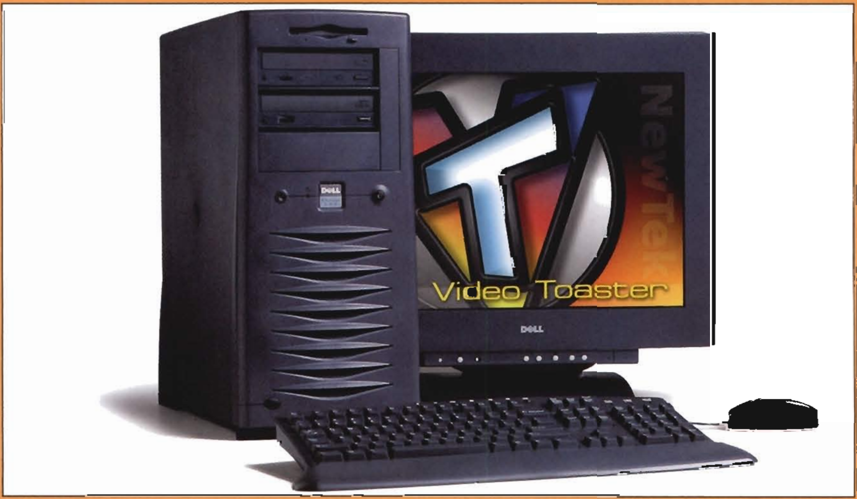

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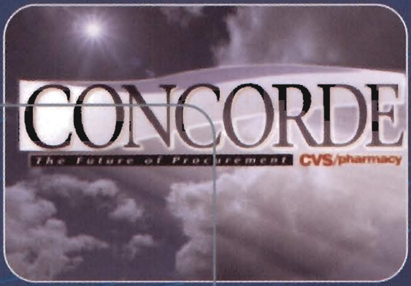

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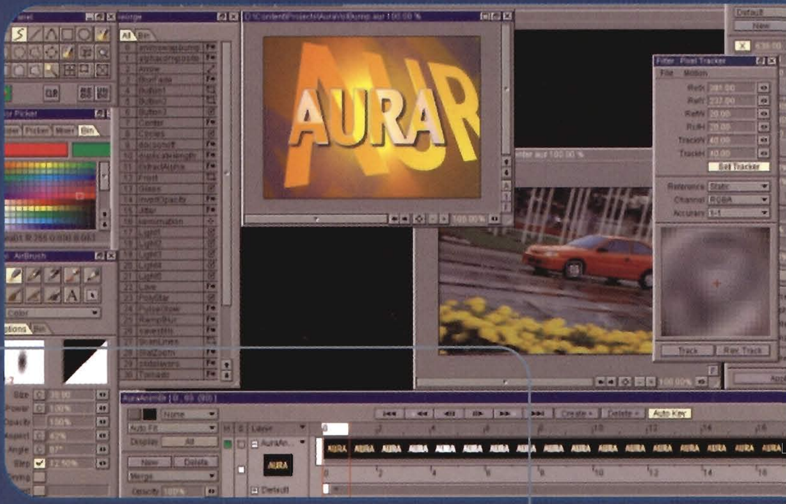

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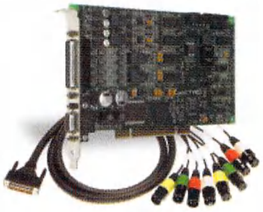

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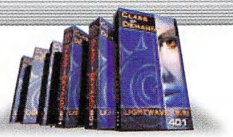

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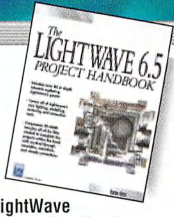

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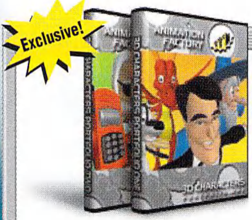

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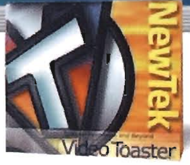

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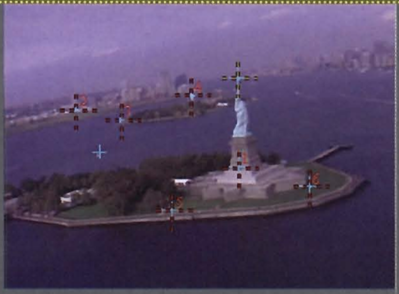
By Jim Cullers

SynaPix's SynaMatch 1.7



SynaPix's SynaMatch significantly reduces the time and cost of matchmoving by recovering accurate 3D camera path and scene geometry quickly and reliably on virtually all kinds of shots including hand-held, long image sequences, archival footage, helicopter shots, and shots with objects entering and leaving the scene. NewTek's LightWave 3D animation system supports direct import of 3D camera path and scene geometry from SynaPix's SynaMatch 1.7 matchmoving software. Compatibility between the two products offers post production and special effects facilities a powerful and cost-effective solution for recovering 3D camera paths and creating cutting edge 3D effects for film, broadcast, game development, and other applications. www.synapix.com $7,500

Evasion's X-Dof

X-Dof (Extreme Depth of field) is a LightWave plugin simulating real camera depth-of-field. To achieve photorealism, X-Dof has been designed to produce soft and accurate depth of field by combining X-Dof's convolutions with camera sampling generated by LightWave's built-in DOF. The results are clean soft-edges, calculated at a fraction of the time needed with LightWave alone. A user can achieve correct color bleeding with customizable pixel and surface intensity with the ability to define pixel intensity via various channels such as specular, luminous or special buffer. This provides great flexibility in achieving a realistic color scheme, and desired DOF effect. www.evasion-studio.com $169

Hitachi's DZ-MV100A the World's First DVD-RAM Camcorder

Employing a 1/4-inch CCD with an effective area of 720,000 pixels, the DZ-MV100A records 60 minutes of 704 x 480 DVD video in a standard Mpeg2 format. For stills, you can capture 1,998 mega-pixel photos. The recording media is an eight-centimeter DVD-RAM disc (DVD-RAM Book 2.1 compliant) that is rewritable up to 100,000 times with no image degradation. (Currently not many drives will read this media but Hitachi is betting all that will change.) This unit will record analog video signals through an s-video input depending on the source. Another feature is a USB data port for transferring still photos. www.hitachi.com/dvdcam. $2,000.

Panasonic's DVD-RAM/R Drives

The LF-D311 burner provides DVD format flexibility in a single device, this Panasonic DVD-RAM/R drive was designed for people who want a cost-effective solution for creating, storing and sharing high-quality videos, photos, illustrations and data. Offering 4.7GB of capacity on a single side, the DVD-R and DVD-RAM discs provide low-cost, removable storage. In addition to the bundled Sonic DVDit! LE software, the DVD-RAM/R drive includes Windows 95, 98 and NT 4.0 software: device driver, UDF-installable file system, MPEG-2 real-time encode/decode, backup and utility software. Initially, the drive will be supplied with an ATAPI interface for OEMs and third-party subsystem suppliers. Several drives are available with SCSI2, USB and IEEE-1394/FireWire connectivity. The drive is scheduled to begin shipping in July priced under $1,000.

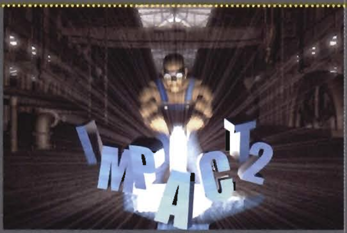
LaCie's FireWire DVD-RAM/R Drive

LaCie is shipping a combination DVD-RAM/R drive that incorporates FireWire connectivity. This drive is a Panasonic LF-D311 packaged by LaCie. The new drive features all of the functionality of DVD-RAM and DVD-R drives, including optimum compatibility for media playback on today's DVD-ROM drives, DVD players and DVD recorders. In addition to writing and reading 2.6GB, 5.2GB, 4.7GB and 9.4GB DVD-RAM media, LaCie's DVD-RAM/R drive reads from discs currently accepted by CD-ROM, CD Audio, CD-R, CD-RW and video CD drives, as well as DVD-R, DVD-ROM drives. The DVD-R discs makes it fast and easy to share video content with others. www.lacie.com $695

Napalm from Dynamic Realities

A popular and powerful particle system for LightWave just got better! Now fully integrated into Layout, there is no more jumping in and out of interfaces, your particles react seemlessly in the Layout window right there at home with your other LightWave items. The included effects are now more powerful than ever, with improved Mimic, Assembler, Spawner, Particle Field, Force Field, Collision Detection, Sticky Particles and more! Make your objects explode into pieces, follow a path, and reassemble into a new shape, at the same time reacting to your Lightwave objects right in Layout! www.dynamic-realities.com $495 upgrade discounts available.

Impact v.2 from Dynamic Realities

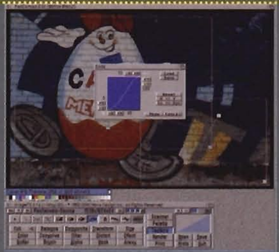


Impact v.2 is a rigid body dynamics and collision detection system plugin for LightWave 5.6 and 6.5 that is fully integrated into Layout. Impact v.2 has a completely re-designed and optimized dynamics engine. Collision Detection lets you decide what will collide with what and when. Impact will control the motion. Force Generators allow you to apply a variety of effects on your objects, such as Vector Fields, Mass Attractors, Fans, and others. Your collision objects can interact with deformation objects. www.dynamic-realities.com $595 upgrade discounts available.

RTV Realtime plugins for Adobe Premiere 6.0

Bob Tasa's RTV Realtime plugins for Premiere 6.0 will give you uncompressed dual stream D1 editing with up to 3 graphics layers in realtime using Adobe's Premiere 6.0 and Newtek's VideoToasterNT 1.0. There are 25 realtime transitions with soft or hard edges that can be modified. RTV's or stills with alpha channel can be placed in motion along a path. Adjust the time of a clip to create slow motion or fast motion. Overlay images and fade them up and down using the handles provided on the timeline in Premiere in realtime. www.toastergarage.com $175

Legacy Maker's Catalyzer 3 and PanMotion



Catalyzer 3 for ImageFX is the third installment in Legacy Maker's tutorial video series for ImageFX users which includes thorough discussions of layering techniques, animated effects, scanning and printing, FXforge, PanCanvas 2 plug-in, and more. The video includes three floppies packed with support materials, demo programs, hundreds of ImageFX-ready FXforge presets, and Time Machine. $49.95

PanCanvas 2 is an easy to use software plug-in for ImageFX 4 that takes a single image and turns it into a dramatic animated sequence perfect for documentary style scenes. This is a very popular product with videographers and editors. $59.95 or upgrade for $25.95 www.legacymakerinc.com

Rest**aura**nt grand-opening

5
young monkey

The countdown has begun for the grand opening of rest**aura**nt - the hip new theme eating place for Aura enthusiasts. Rest**aura**nt offers an expanding menu of tasty treats, prepared by the world's most renowned Aura plug-in chef.

Start with an appetizer: the succulent Range Finder, the delectable By George, or the toothsome Color by Name. Then move on to a main course – prepared before your eyes, by your personal visual effects chef. The succulent Countdown Generator will leave your mouth watering with any of an infinite number of flavors - a scrumptious meal to start or end any day. Or enjoy LumiEssence – as much an enlightening visual experience, as it is a taste that will leave you wanting more.

Where do you go to get food for Aura? The rest**aura**nt of course. No reservation necessary. www.youngmonkey.ca

LightWave 6.5b

LightWave 6.5b is a free maintenance upgrade to LightWave 6.5 that is a big improvement. The new "Shading Noise Reduction" tool in Layout greatly improves the render quality of zero-tolerance radiosity and area/linear light shadows. This feature allows for much higher quality radiosity output at lower radiosity settings, resulting in greatly reduced render times. The new bones settings allow for much more intuitive and accurate control, allowing more control over bone intensity fall off. 6.5b bones works better now at all fall-off settings by adding two new levels.

Other new features in the update include: display of OpenGL textures at a resolution of 1024x1024; the modeler's bank of layer buttons in the main window can now be set to reference different groups of layers; the ability to disable the antialiasing of volumetrics; the ability to unparent an item; a global intensity control for radiosity without limits; a new Cast Shadows option in the volumetric lights panel, which will cast shadows caused by the light opacity; HyperVoxels effects for Velocity Translate, Dissipate, Dissolve, and Dissolve and Expand; new Custom Objects including CameraMask, FrameRate, RangeFinder, and Speedometer. New plug-ins available in LightWave 6.5b include: Decimate, a polygon reduction modeling plug-in; and Vertex Paint, a vertex painting tool. www.newtek.com

FEARGAL O'MALLEY
IRELAND

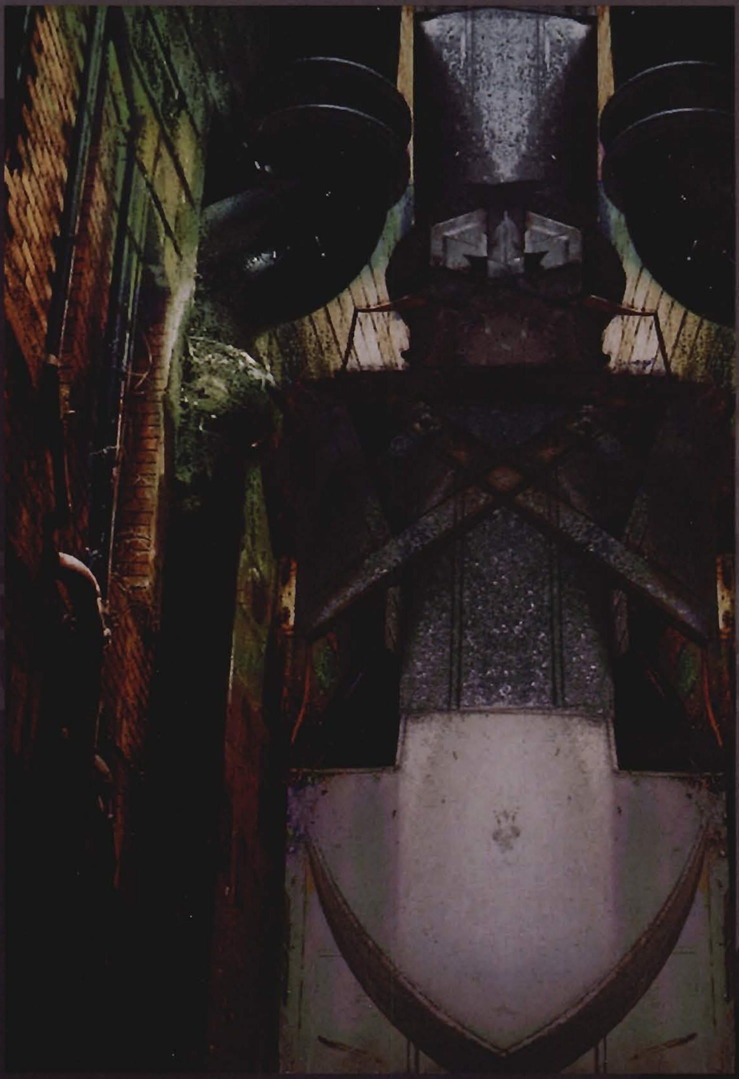
Resident of Belfast, Ireland, Feargal O'Malley produces compelling compositions by combining fine art with CG imagery. O'Malley, who holds an honors degree in Visual Communications from the University of Ulster, endeavors to create a "cinematic experience" in his work.

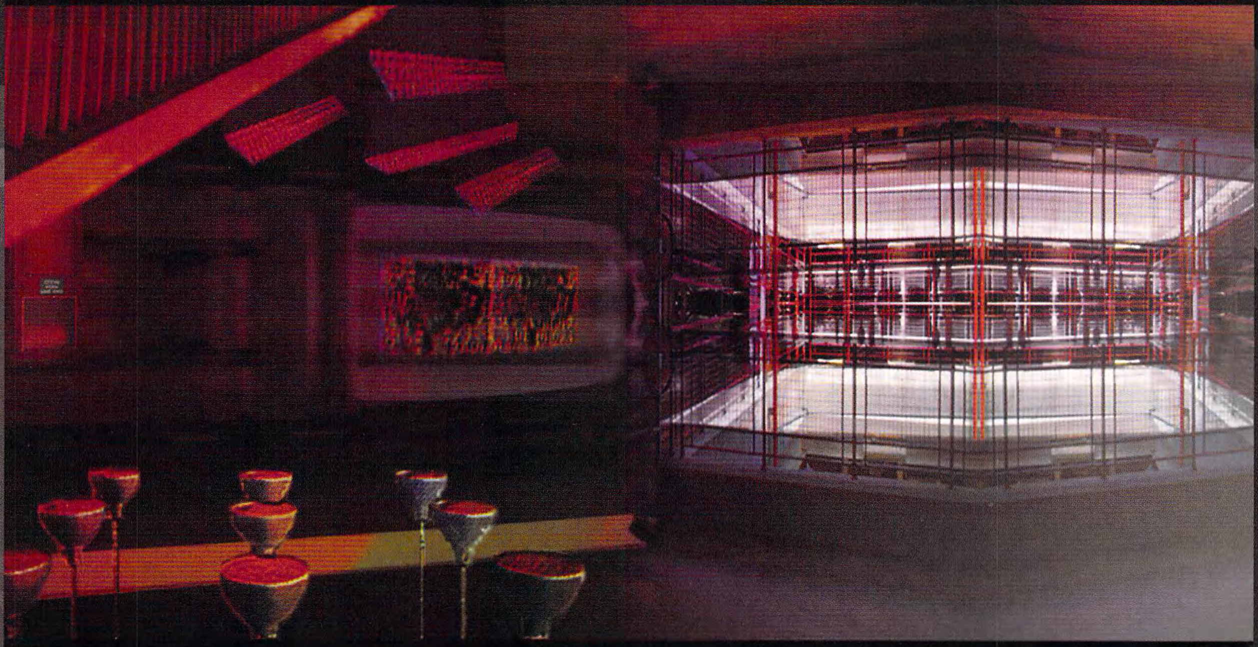
O'Malley writes, "it seemed the natural step to progress from traditional methods to digital technology." The time-saving move to working on the computer has afforded him instantaneous visualization of his ideas. And he can distribute his art more efficiently and effectively.

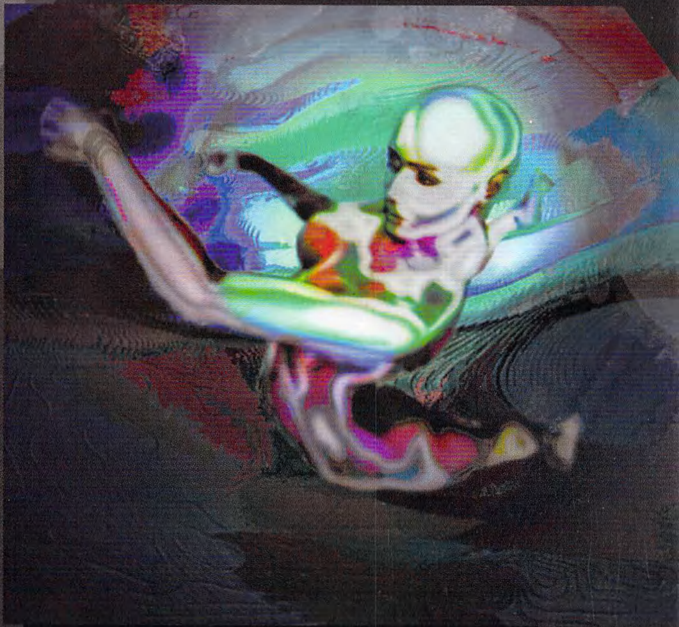
Currently O'Malley serves as Art Director for Dream Ireland (www.Dream-Ireland.com), a Belfast R&D company for media and entertainment. His current projects include "Psychostasia," a Dream Ireland computer game, and an independent produced interactive comic. These multi-disciplinary undertakings permit O'Malley to continue expanding his 2D and 3D animation skills.

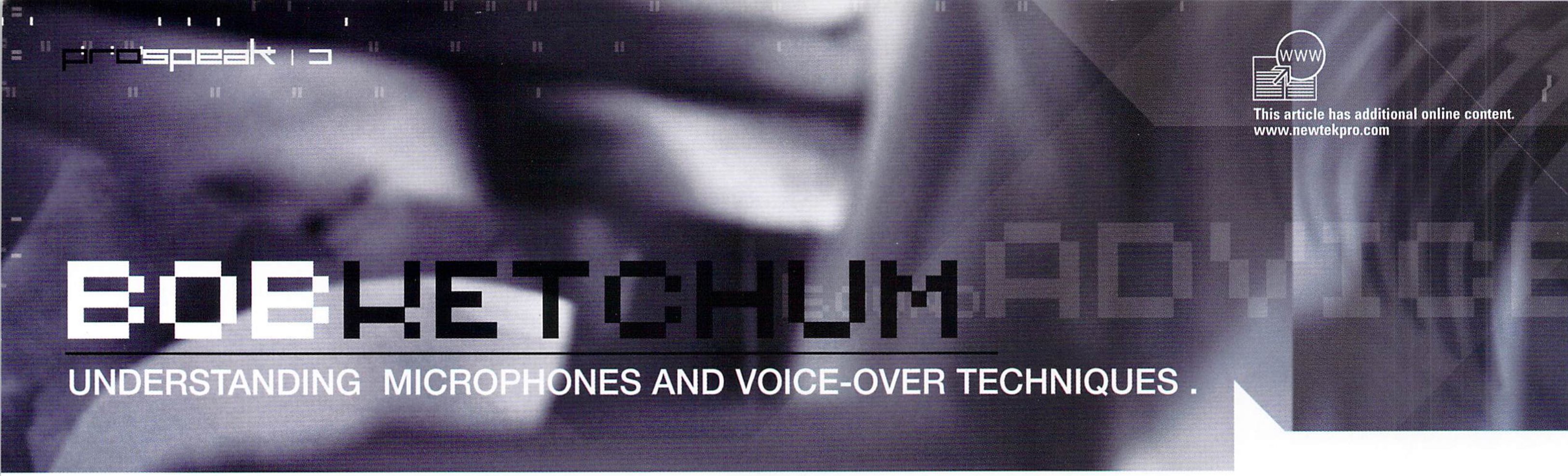
O'Malley uses LightWave and Photoshop and especially likes Aura, which he describes as "easy to work with and has a simple learning curve;" but he adds, "basically I feel it is inconsequential which software package I use. I see it as just a tool, one which gives me greater flexibility than purely traditional means."

He begins with drawings and/or photographs, which he digitizes. For dramatic effect, he then builds layer upon layer. Lastly, he applies strata of color and digital effects to achieve the desired ambience and mood.









This article has additional online content.
www.newtekpro.com

ADVICE

BOB KETCHUM

UNDERSTANDING MICROPHONES AND VOICE-OVER TECHNIQUES .

Video production isn't only about what you see. Just as important, though often not given the consideration it deserves, is what you hear. Sound quality considerations should be an equally significant part of most video projects.

Everyone's needs and expectations are different, so all I can hope to accomplish here is to give you a good foundation for approaching sound recording with the goal of getting the best out of what you have at hand. The main focus of this article will be techniques for recording good voice (speaking) recordings, but many of the ideas apply to any kind of sound recording.

PART 1

Understanding Microphones

Every sound recordist has his or her special recording techniques, preferred sound processing enhancements, and favorite microphones. Though specific microphones (mics) are made for particular purposes, some respected sound producers have developed techniques that allow them to use a single mic. As with most everything, it's not always what you have that is important, it's how you use it.

Microphones come in all kinds of designs and variations. The two main things to consider when choosing a microphone are design type and directional response pattern.

Design Types

Dynamic mics output a small electrical voltage produced as the result of a wire coil sliding back and forth along a magnet *(electromagnetism)*. The coil is connected to a diaphragm, which reacts to air movement. Basically, the opposite of a speaker - which can also be used as a microphone, though not a great one. Dynamic mics are rugged, dependable, and typically low cost. No external power or batteries are required.

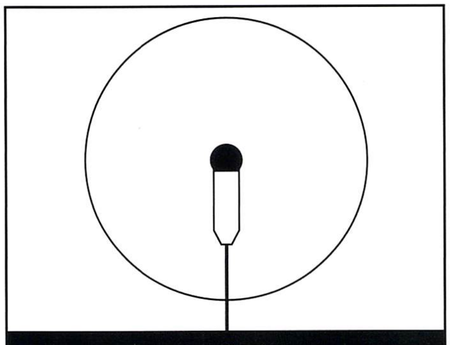
Ribbon or velocity mics are related to the dynamic design. Instead of using a coil, a thin conductive strip is suspended between two magnetic poles. These mics can be very fragile; but, they have seen a resurgence in popularity in recent years, probably due to improved construction techniques and materials which make the mic a bit more hardy. Ribbon mics exhibit a superior transient response, and exhibit a characteristic ringing sound that lends a warm texture to acoustic instruments and vocals. They tend to be a bit more expensive than dynamic mics and are roughly in the same price range as quality condenser mics.

Condenser mics require either a battery or +48 V *(phantom power)* power supply to do their job. In these mics, an electrically charged diaphragm reacts to air pressure causing voltage fluctuations on the back of a plate - which produces an electrical "picture" of the sound. These mics are particularly sensitive; however, their softer, brighter, more open sound is particularly nice for female voices. Condenser mics are more vulnerable to daily wear and tear, and more sensitive than dynamic mics to extreme environmental conditions.

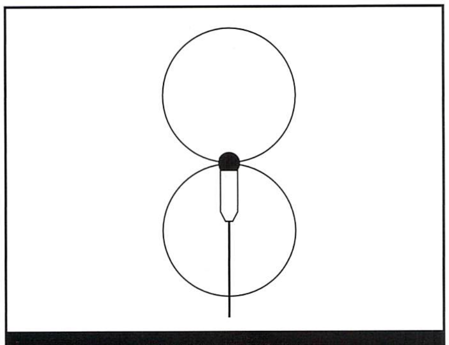
Directional Response Patterns

The shape in which a microphone is able to hear sounds is called a *directional response pattern*. The most common of which are: omnidirectional, bidirectional, and cardioid. Some mics are switchable, offering several different response options.

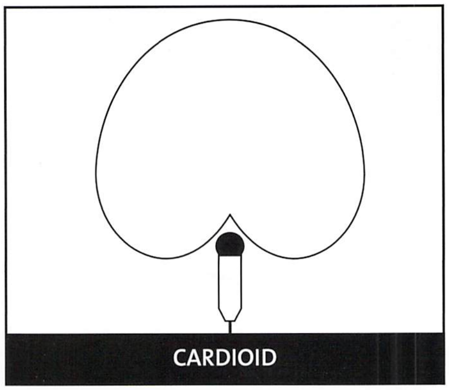
Omnidirectional mics have a pickup response that is equal from all directions.



OMNIDIRECTIONAL



BIDIRECTIONAL

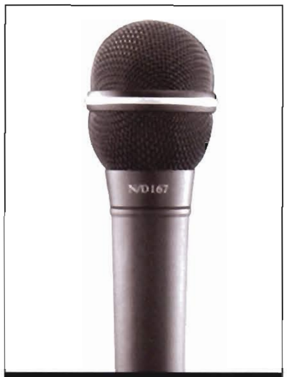


CARDIOID

BOB KETCHUM | SOUND ADVICE . UNDERSTANDING MICROPHONES AND VOICE-OVER TECHNIQUES .

beyerdynamic

BEYERDYNAMIC M 88



ELECTRO-VOICE ND167

SHURE SM58

SENNHEISER MD 421

RODE CLASSIC

This is usually not a good selection for voice-over work as it will pick up too much surrounding ambience.

Bidirectional mics have a response pattern shaped like a figure-8, with sensitivity on the front and back. This would be ideal for recording two people at the same time. Facing them towards each other and placing the mic in the middle, will provide very strong pickup for each person, while rejecting unwanted noises from the sides.

Cardioid (unidirectional) pattern mics would be a good choice for recording a single person. They provide a heart shaped pickup pattern with sensitivity on the front and sides. Variations include: hypercardioid and supercardioid.

Choices, Choices

You can choose from lots of microphones, each with a mind of its own. As a rule, the more accurate the recorded sound, the more expensive the mic. Obviously, a $3,000 mic can capture the subtle nuances of sound better than a $300 mic. But, even a $3,000 mic won't fix a badly delivered voice-over or otherwise poorly recorded track.

[Editor's note: All following prices are manufacturer's suggested list.]

It isn't necessary to capture sound as perfectly as possible. I have done some of my best voice-over tracks with a Shure SM58 (under $200) or a Sennheiser MD 421 ($485). Currently my favorite mic is a RODE Classic ($2,000), but only because of its added versatility - featuring nine selectable pickup patterns, gain control, and bass roll-off functionality. But, I could just as well record acceptable voice-over tracks using models which cost less than $200 from audio-technica, beyerdynamic, Electro-Voice, Fostex, or Peavey.

[Editor's note: At young monkey studios, we're very fond of the beyerdynamic M 88 ($399) hypercardioid dynamic mic. We've been using one for 14 years, for just about every purpose imaginable. It's a well respected microphone. Unlike many other technologies, older mics aren't as quickly surpassed by newer ones. Microphones are like aged wine.]

If you don't have a large budget for a microphone, then perhaps a good dynamic mic like the *Shure SM58, Sennheiser MD 421,* or even an *Electro-Voice ND167* ($188) would do nicely. If you prefer an airy sound to a warm feeling one, or if you regularly use female voice-over talent, then you might consider a condenser mic like the *audio-technica AT4033a/SM* ($725), or the *Shure KSM32* ($959). Of course, if money is no object, then go for the gold with an *AKG SolidTube* ($1,165), *audio-technica AT4060* ($1,695), or *RODE Classic II* ($1,999). Sound expensive?

Well, in the land of professional microphones we're just scratching the surface. The Lamborghinis of the microphone world come from Neumann, who offer mics ranging from $2,000 - $5,000. Vintage models could cost you as much as a mortgage on a two-story home in the Ozarks. The *AKG C 12 VR* ($4,821), *Sony C800G* ($6,550), and *Manley Laboratories Gold Reference* ($8,000) are also high-end favorites.

Bob Ketchum, the Mystic Maven of Microphones, reminds the reader that sometimes a microphone is just a microphone - unless it says Neumann on it.

PART 2

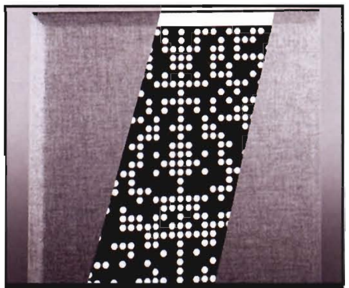
Recording Environments

Now that you have settled on a microphone, you need to determine the best recording location. Since we are discussing voice-overs, let's focus our attention on good indoors environments.

The most common approach used in professional sound studios is to create an acoustically "dead" recording booth. Afterwards, by using any of a variety of signal processing devices (reverb, delay, etc.), you can enhance the "dead" sound to taste. A more affordable option is to take advantage of the acoustics of an existing room. Though, if the environment introduces unwanted ambience in a sound recording, that "noise" can be very difficult to remove.

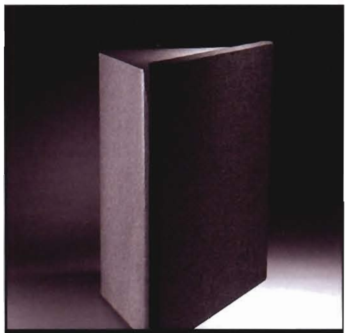
Singing In the Shower

You've heard it said that even a bad singer can sound good when singing in the shower. Typically, bathrooms are very reverberant, which makes it sound as if many clones are singing all at once. And enough bad singers singing together usually don't sound so bad. If you want to add some natural reverb to your voice-over, try a nice tiled bathroom. It may sound funny, but many studios have achieved great results recording in a bathroom or shower stall. A wood paneled sauna can also be a great acoustic environment.



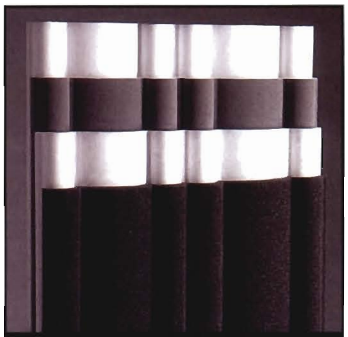
RPG FLATFFUSOR:
DIFFUSION + ABSORPTION
TREATMENT

If you decide on using a room's existing ambience, you may want to slightly adjust the environment. First, examine the acoustics of the space by standing next to a wall and clapping your hands together once, fairly hard. Listen carefully. Do you hear echoes, reverberations or a ringing sound? If the room is in a garage or concrete basement, you'll probably hear a lot of ambient reflections.



RPG MODEX CORNER:
BASS TRAP

Next, do some test recordings, with your own voice if you want, if it's not too distracting. Or ask a friend to sit in for this test - someone whose voice is similar to your voice-over talent. After a few test recordings, listen closely to the playback with a pair of headphones. Do you hear unwanted bass, fluttering high-ends, or bouncing frequencies? If so, you can try one of the following remedies.



RPG PROFOAM:
DIFFUSION TREATMENT

Out, Out Brief Noises

Without exploring the complexities of the principals of sound, here are a few basic ideas that you can experiment with.

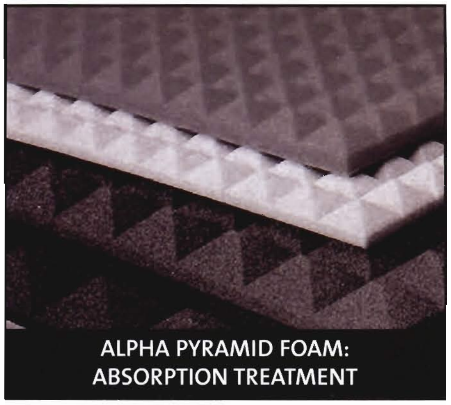
Acoustic diffusion and absorption materials come in all sizes and shapes, and at a cost that can fit any budget. You can effectively use anything from the time-worn (though beautiful only to a chicken farmer) egg carton treatment, through to professional diffusers and sound tiling. Affordable and available items like carpet, foam, blankets, mattresses, curtains, sleeping bags, fiberglass insulation, and even styrofoam often work well in certain circumstances.

Different materials diffuse or absorb different frequencies. Carpet and foam (or even carpet over foam) will absorb standing bass waves and help tighten up a room - acoustically speaking. Styrofoam panels will absorb upper-mid frequencies and even some extreme highs. Packing blankets are great for isolating sound and absorbing ambient noises, you can never have enough of them. As a general rule, porous materials (such as lumpy mattresses or overlapping blankets) absorb high frequencies best. I have even reduced high-frequency slap and tightened up a room by hanging an army surplus parachute from the ceiling.

Once you've determined what materials achieve the result you're after, you should then decide how permanent you want the solution to be. The simplest approach is to just nail the materials to the walls. Another good trick is to arrange pillows, sleeping bags, or carpeting as necessary and then cover it all over with burlap or muslin. (If you're cosmetically conscious and don't want your room to look like the remains of a Cub Scout camping trip, create a wooden frame for support.) If possible, leave an air pocket of several inches between the treatment and the wall. This will act as a bass trap, decreasing lower-mid and mid-bass frequencies.

You can make low-cost bass traps using rubber trash cans (35-55 gallons). Drill them full of holes, fill them up with fiberglass insulation, and place one in each corner of your room. Or build lattice frames of wood slats about 3' wide and the same height as your ceiling. Cover them with muslin or burlap. Place this frame diagonally across a room corner and fill behind it with R-30 insulation. Leave the foil on, foil side out toward the room. Repeat this for each corner.

Also, if you hear about any large corporations going out of business, be sure to attend the auctions. Room dividers are a common find, and great for quashing ambient noises.



ALPHA PYRAMID FOAM:
ABSORPTION TREATMENT

Absorbing Junior

Unless you've designed a completely soundproof booth, all kinds of unwanted noises will seep in through the walls and windows, especially if you are located near roadways. Nothing quite like the sound, and resulting frustration, of a tractor-trailer passing by, right smack in the middle of the quietest part of your narration or the friendly flush of an upstairs toilet or a not-so-quiet son insisting on playing just outside your studio (Robert!). Escaping these kinds of sounds is a tough assignment.

You can start by closing windows and covering them with blankets or a mattress. Also, close doors and poke towels or weather-stripping into the spaces at the bottom. If feasible, consider replacing hollow doors with solid ones. It also helps to open closet doors, move couches and padded chairs slightly away from the walls, and reposition objects/furniture in such a way as to reflect sounds from parallel walls. Room resonance is more troublesome in a cubical room. It's less of a problem if the length, width, and height of the room are all different.

Here are a few more obvious, but often forgotten, tips for reducing room noise while recording:

- Turn off appliances and telephone ringers.
- Unplug the refrigerator - and don't forget to plug it back in.
- Pause and wait for ambulances, tractor-trailers, and airplanes to pass.
- Make sure the air conditioning doesn't turn on during recording.
- Turn off all fluorescent lights.
- Only turn on the studio equipment you are using to record.

To improve imaging and frequency response in your mixing/listening environment, place foam on the wall between your monitor speakers.

If you have the budget and desire a room with a more professional appearance, invest in specialized acoustic treatments. Consider products from Auralex Acoustics, Acoustic Sciences Corporation, Acoustical Solutions, or RPG Diffuser Systems.

Bob Ketchum, the Anarchist of Acoustics, has just left the recording booth to wage war with the air conditioner, the telephone, and that annoying drip in the bathroom sink.

PART 3

Voice-Over Techniques

Sooner or later, all video producers face the task of recording voice talent. Regardless of what the project is - a 30-second television commercial, a one-hour corporate/industrial training video, or a complex documentary requiring several different methods of voice-over narration - consistency and clarity are of paramount importance. Your job will be greatly facilitated by a highly competent voice-over person (VOP).

Finding the Right Voice

If you don't have the budget to hire Walter Cronkite, consider some more affordable alternatives. Announcers from the local commercial-radio or TV stations have the experience and you have a good idea how they sound. If they are too expensive, try tuning into a university radio station and listening for a voice you like. Students are always looking for extra cash. Check theatre groups - actors usually have experienced, well projected voices. A friend or co-worker might have the perfect voice for the job. Or, if all else fails, you could just do it yourself.

SHURE: PS-6 POPPER STOPPER

Whoever you choose, be sure your VOP doesn't have a strong local accent (unless of course that's what you need) - finding someone here in the Ozarks, for example, who can speak without a Southern drawl can prove more difficult than you might imagine.

I am fortunate to have grown up in a resort area, so we always had a lot of relatives and guests visiting from all over the United States. As I grew into adolescence, I developed a mostly neutral speaking voice. Later when I entered radio broadcasting, this proved to be very beneficial. In time, my voice came to be in demand because I sounded like I could be from anywhere. Of course, in real life, I do have a bit of a twang. But after 15 years of radio announcing, I have learned how and when to turn it on and off. Nowadays, I instinctively slip into my radio voice the instant I put on the headphones and step up to a mic.

I'm no James Earl Jones when it comes to narration. The only time I have real resonance to my voice is after a four hour singing gig, or possibly the morning after a knock-down, drag-out, yelling match with the neighbor. I try to time those events as best I can to coincide with voice-over sessions. It may sound ridiculous, but you'd be amazed at the difference it can make in voice performance. After a night of band rehearsal or a concert performance, my throat is fully exercised, open, and produces a much deepened voice. I was kidding about the neighbor.

Preparation

Scripts should be printed using an easy to read font, at least 14 points. It's important to number the pages - staples are forbidden in this work. The last thing you want is to hear a page turn in the middle of a read. And never let a section of dialog cross over to another page. If possible, give the script to the VOP a few days in advance so they can prepare.

AXMAN MICROPHONE STAND WITH TELESCOPING BOOM

If your VOP will be standing, place the script on a music stand that is foam padded, and angle it to avoid reflection of sound back into the mic. Position the script high enough to avoid the VOP having to move out of the mic's sweet spot to read everything.

Whether the VOP sits or stands while speaking can have an impact on their performance. Generally, standing while reading results in better vocal control because the diaphragm has more freedom to move. I find sitting works well for me, perhaps because through 15 years of radio announcing I always sat at a console to deliver my voice work.

If your VOP wants to sit, make sure you have a sturdy, squeak-free chair for them. Also, be aware that tabletop surfaces will reflect sound waves and may color their voice. Placing a foam sheet on the desk will help absorb these reflections.

Put the mic on a boom stand whenever possible, particularly when sitting at a desk. Desktop mic stands aren't a good idea because even the quietest movements on the desk will be picked up by the mic and amplified in your recording. If you don't have a boom stand, place the desktop stand on a block of foam on the desk in front of the VOP. Also, secure the mic cord - from the mic all the way back to the recorder. The slightest wiggle or tapping of a cord will travel back to the mic and be audible in your recording.

Mind Your P's and T's

A good VOP will know how to work a microphone and make things like sentence structure and phrasing seem almost matter-of-fact. They'll also instinctively know when to back off the mic for louder passages, how to suppress hard plosives (popping P's and clicking T's), and how to avoid the "Seven Sickly Snakes Slithering in the Swamp" - also known as sibilance.

It also helps if your VOP doesn't speak directly into the mic. Instead, speak at a slight angle to the mic so that airflow passes by the mic, rather than being forced directly into it. A pop filter also can be a great help with this problem. These inexpensive devices can be purchased from a music store, or you can make your own by stretching panty hose over a rounded wire coat hanger. Don't be TOO cheap now - this is not one of those times when recycling is a good idea, so go out and buy a new pair of hose.

If you're working with someone who doesn't have a lot of experience, or if you've decided to do it yourself, make sure you take the time to do some practice reads. When speaking, project your voice from the upper stomach, as opposed to the throat. Pace your speaking, and pay particular attention to proper enunciation.

Headphones

Headphones are an absolute MUST. Your VOP will deliver a better performance if they can hear themselves. They will enunciate more clearly, be more aware of plosives, and instantly know if they are straying too far from or moving too close to the mic. The VOP will also be able to tell how far back they need to move to silently take a breath before starting the next line.

Be wary of the VOP that wants to hear playback of every little nuance of their delivery. These people usually spend too much time fretting about the sound of their own voices, and not enough time paying attention to the matters at hand.

Have a glass of water during the recording. The longer your VOP can keep going uninterrupted, the more consistent your track will sound.

I have noticed that milkshakes and other dairy products can make my voice sound a bit thicker. A cup of hot tea with lemon in it seems to clear up my sinuses and open my throat a bit more. A milkshake combined with hot tea would probably confuse things — not to mention taste bad.

It's Now Or Never

It's very important to record all the narration for a project, or at least individual sections of the project, in one session. After warming up, your VOP will slip into a speaking rhythm. If you break the flow, for any reason (lunch, for example), you'll be surprised at how long it takes to return to the same feeling and pace - assuming that you even can. The differences may not be so obvious while you're making the recordings; but believe me, the moment you sit down to assemble the clips, you'll hear it all too clearly!

Countless times I have completed a narrative, only to have the client request a change that requires some part of the voice-over to be re-recorded - usually several days later. When that replacement audio is heard along with the previous recordings, it stands out like a sore thumb. Try to make sure the narrative you are recording is the absolute, ultimate, final version of the script. I have actually had jobs where there were so many changes, after the fact, that it became necessary to re-record the entire narrative just to resolve vocal continuity.

Practice Makes Perfect

You may never become a voice-over recording expert. And maybe you shouldn't try. It takes a lot of practice to really perfect the process. Human speech sounds are so dramatically different and individual that no set way to record the voice exists. The tonal combinations are virtually endless.

All the elements, tips, and situations described here present a good place to start in your quest for the perfect narrative, but by no means does it end here.

One last thing. If you've done your own voice-over and really don't like listening to the sound of your voice, ask someone you trust to listen to the playback and then discuss it. The first time I heard my voice on tape it sounded so squeaky to me that I swore I'd never do it again. I've since learned to hear my voice the way that others do and don't mind it so much now. Not that I still wouldn't like to have James Earl Jones bequeath his vocal chords to me.

Bob Ketchum, the Viceroy of Voice-Overs, sits up late at night just to hear, "This is CNN."

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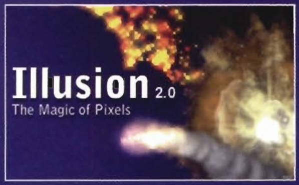
IMPULSE illusion 2.0

BY STEVE BOWIE



Does hearing the word Imagine conjure up any memories? How about Impulse? Or maybe you've heard of Mike and Larry Halvorson? – two software developers who have been around the industry since desktop computers discovered the 3rd "D".

Debuting on the Amiga platform with *Silver*, then *Turbo Silver*, and later their flagship application *Imagine*, Impulse has been synonymous with raytrace graphics since the '80s. They've since moved over to the Windows platform where they offer their newest claim to visual effects fame... *Illusion 2.0 - The Magic of Pixels*. It truly is magic - and accomplished without the use of secret panels or hidden mirrors!

What is it?

It's somehow fitting that a program named Illusion comes from a company in Las Vegas. Illusion's magic lies in its ability to produce a variety of 2D particle effects "out of thin air," including: sparks and sparkles, blasts and bursts, flames and fireworks, shockwaves and smoke trails, running water and photon torpedoes, or any of a seemingly infinite number of other exotic, fascinating, and occasionally creepy effects.

Illusion isn't just for creating smoke-filled explosions. The same motion controls can also be used to create unique and interesting scene transitions and text or logo animations. Sample projects that generate flying and swirling text are included to get you started.

This program is a stand-alone application, not a plug-in. As such, you can create projects completely within Illusion, and export animations in a variety of common single-frame or animated file formats (AVI is supported, but not QuickTime). Alternatively, you can add particle effects into imagery created elsewhere by importing a background image, image sequence, or AVI animation into one or more layers.

Direct support is included for import/export of position data in After Effects 4.0 and TAB-Delimited Text formats. A position exporter for LightWave is also available. Aura users may want to investigate the Aura Illusion Exporter plug-in available from Visual Inspirations. Importing/Exporting path data allows users to, for example

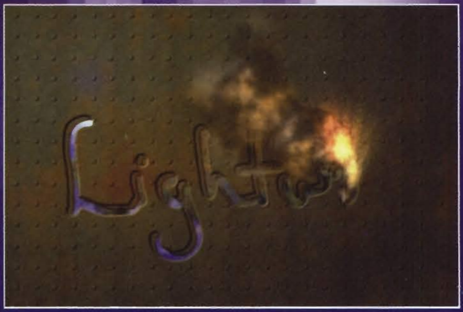


Figure 1. An example of using a motion path created with Aura's Stroke Recorder to simulate a blowtorched text effect

RATING >> 0-5

Features. 4.0
Ease of use. 4.0
Documentation. 3.5
Value. 3.0
Installation/Setup. 3.5
Technical Support. 4.0

Pros. Fun. Fast. Creatively stimulating. Lots of examples.
Cons. Parameter panels can be disorienting. Stage setup can result in unexpected results.

Product.
Impulse Inc.
Illusion 2.02
2D particle effects system and compositing tool.

Minimum Requirements.
System. P3 @ 250 MHz
OS. Windows 2000/ME/NT4/98/95
RAM. 64 MB
HD. 10 MB
Display. 800 x 600 (16-bit)

Price.
US$299

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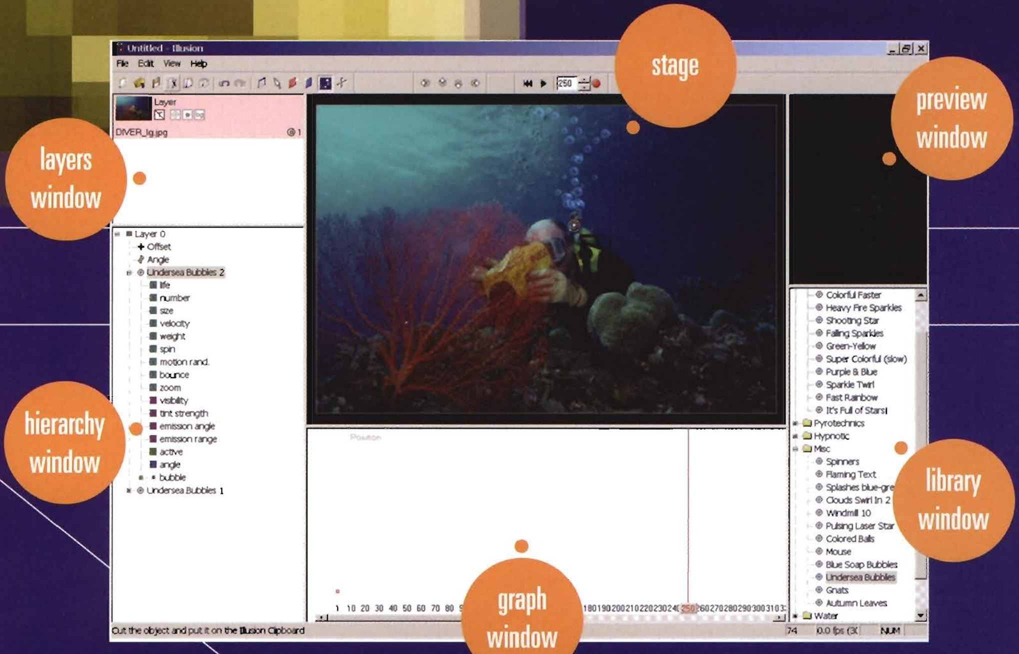
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Heavy Fire Sparkles
Shooting Star
Falling Sparkles
Green-Yellow
Super Colorful (slow)
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Sparkle Twirl
Fast Rainbow
It's Full of Stars!
Pyrotechnics
Hypnotic
Misc
Spinners
Flaming Text
Splashes blue-gre
Clouds Swirl In 2
Windmill 10
Pulsing Laser Star
Colored Balls
Mouse
Blue Soap Bubbles
Undersea Bubbles
Gnats
Autumn Leaves
Water
library window
graph window
Cut the object and put it on the Illusion Clipboard
NUM

Figure 2. Illusion's user interface

in Aura, apply particle effects to Stroke Recorder or Pixel Tracker motion paths. **Figure 1.**

If you are thinking that 2D effects won't hold up to the quality of similarly capable 3D applications, think again! It's true that Illusion does its magic in 2D; but it can fool many an experienced eye. Illusion's advantage is not in its quality of effects (as compared to 3D programs like LightWave), but in its ability to render similar quality at speeds that can reach or even exceed realtime - taking advantage of OpenGL hardware to provide in-your-face feedback.

Illusion's key-frameable Zoom parameter is suggestive of 3D Z-buffer depth. It not only scales the effect, but also compensates for distance motion. As well, particles can interact with deflectors or hide behind blockers to enhance the illusion of 3D.

How Does it Work?

Following a quick and easy installation process using the standard InstallShield, Illusion presents a deceptively simple interface. The GUI is divided into several sections, the main area being the Stage - which is where you position your emitters, deflectors, and blockers to create your masterpiece. **Figure 2.**

In the Library, you'll find effects grouped into various categories. Just selecting one of the many included presets shows an immediate animation of the effect in the Preview window. And if that's not enough, for many effects you can also drag your mouse in the Preview to see the effect in motion.

Surrounding, are various control windows that provide access to Illusion's powerful features: the Layers window - for elaborate layer compositing, the Hierarchy window - to control animation functions and particle types, and the Graph window - to manage emitter and particle functions over time.

Emitters are a grouping of one or more particle types, affected over time by carefully tweaked properties such as: tint, age, weight, spin, bounce, etc. Using bitmap particles, an astounding array of emitters can be created - simulating real-world visual effects or wildly imaginative ones.

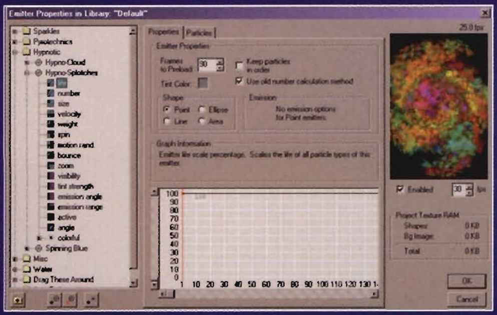
Emitter Properties in Library: "Default"
Sparkles
Pyrotechnics
Hypnotic
Hypno Cloud
Hypno-Splotches
number
size
velocity
weight
spin
motion rand
bounce
zoom
visibility
tint strength
emission angle
emission range
active
angle
colorful
Spinning Blue
Misc
Water
Drag These Around
Properties
Particles
Emitter Properties
Frames to Preload
Keep particles in order
Use old number calculation method
Tint Color
Shape
Point
Ellipse
Line
Area
Emission
No emission options for Point emitters
Graph Information
Emitter life scale percentage. Scales the life of all particle types of this emitter.
Enabled
fps
Project Texture RAM
Shapes
Bg Image
Total
OK
Cancel

Figure 3: A DirectX digital Vibrato effect plug-in.

If you tire of the lengthy list of included ready-to-go emitters, you can create variations by tweaking parameters in the Properties panel. **Figure 3.** Or you can let your imagination roam and create something completely new.

Motion Blur is available within Illusion, and the multi-level Undo is nice to have as well. Keyboard shortcuts for common functions are also provided.

Ease of Use

Creating an animated project in Illusion is child's-play. To start, select an emitter from the Library. Click in the Stage view to position the emitter. Then to add some motion over time, type a number into the Current Frame gadget to jump to another frame. Click the Select Emitter gadget, and reposition the emitter. You'll see a line indicating the motion path you've just created. Repeat this on another frame, and then right-click on the middle key-frame to change from linear motion to Bézier curve. Click Rewind, and then Play to watch your creation. Too easy! **Figure 4.**

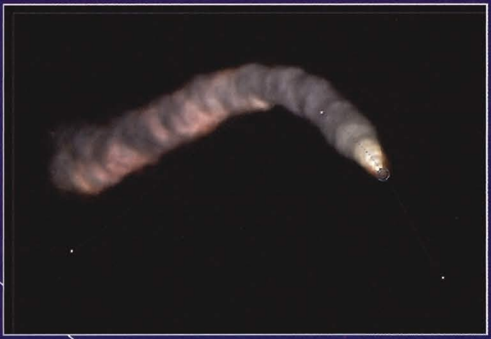

Figure 4. Fiery Smoke trails

I have yet to show Illusion to anyone who didn't fall in love with it. It's so addictive that if it weren't made in the USA, it would surely be necessary to smuggle it into the country. Hey, if it's good enough for Digital Muse to use in *Star Trek: Voyager*, it's good enough for me! Other Illusion appearances include: *405 the Movie*, *Roughnecks*, *MaxSteel*, and *LEXX*.

Potential Concerns

In several months of moderate use of Illusion 2.02, I encountered a couple lock-ups but could never find a combination of events that would cause it to happen consistently. I also stumbled on a problem saving AVI's with 16-bit audio. An e-mail to customer support resulted in a prompt response from Alan Lorence, Illusion's principal programmer, who explained that there is a limitation of 8-bit audio in this version.

Setting the correct Stage resolution is critical. It's a little bit confusing, at first, that there are two places where the Stage size can be set - Project Settings override the same setting found in the Preferences' General panel.

Although Illusion can output any frame size up to 8192 x 8192, it's important to realize that you can ONLY render imagery as big as you can physically size the Stage view. On a 1280 x 1024 screen, for example, you can only make a Stage size of about 1250 x 885 - but only by hiding all other sections of the GUI.

The Stage view includes zooming features, but the zoom is also applied to the rendered images. So, a 640 x 480 Stage zoomed 50%, will output a 320 x 240 frame. In this manner, Illusion is truly WYSIWYG – if you can't see it in the Stage view, you won't get it in the output. If your destination is NTSC or PAL video resolution, Stage size shouldn't be a problem. But if you need to render images larger than the Stage, you'll most likely have to buy Impulse's IllusionRender for an additional $99. IllusionRender operates as a background task and can be used as a batch processor as well.

Our testing also revealed a few other minor problems. Trying to load a couple of the included sample projects caused the program to crash, assumably it couldn't find some of the files required by the project. Canceling some requesters does not cancel the operation. Although the documentation is good, accessing it is cumbersome. You go through several requesters to reach it, and sometimes it fails. It's easiest to just open it directly in your HTML browser. Also, the program should be smart enough to stop playing when it reaches the end of an animation.

System requirements

I recommend leaning towards specifications higher than the minimum requirements for this application. Impulse's recommended specifications are more reasonable: P3 @ 500 MHz + 128 MB with an NVIDIA OpenGL hardware video card.

Tests on a P3 @ 450 MHz + 128 MB / Windows NT4, using a Permedia II (8 MB) display card, required disabling of the hardware OpenGL option to prevent larger particle bitmaps from losing their transparency. On a P3 @ 800 MHz + 768 MB / Windows 2000, using a Matrox G400 (32 MB) graphics card, there was minor mouse sluggishness while previewing intense effects. Notably, the G400 is not heralded for fast OpenGL implementation. As would be expected, Illusion works beautifully on a P4 @ 1.4 GHz + 128 MB / Windows 2000, using an NVIDIA GeForce2 MX chipset card (32 MB).

Support

In addition to Impulse's own support, help can be found through numerous websites, mailing lists, and discussion boards (where you can find many tutorials, suggestions and examples). Illusion's documentation is quite comprehensive too, including several tutorials that provide a good start to learning the application. The Impulse website includes a growing collection of ready-to-go effect libraries, which should delight you for a long time.

Conclusions

Apart from the various smoke and explosion emitters (which are reasonably realistic), the majority of included effects are whimsical, "pixie dust" stuff. But Illusion's effects are visually equal to most 3D particle effects I've seen (with the obvious absence of true volumetrics). And I can create them a lot faster.

Overall, I love Illusion! It's super fun. More importantly, in many instances, the software substitutes nicely for a more complex application - saving both time and money! With Illusion in their arsenal, the adventurous artist will surely discover many ways to enhance his or her creative output!

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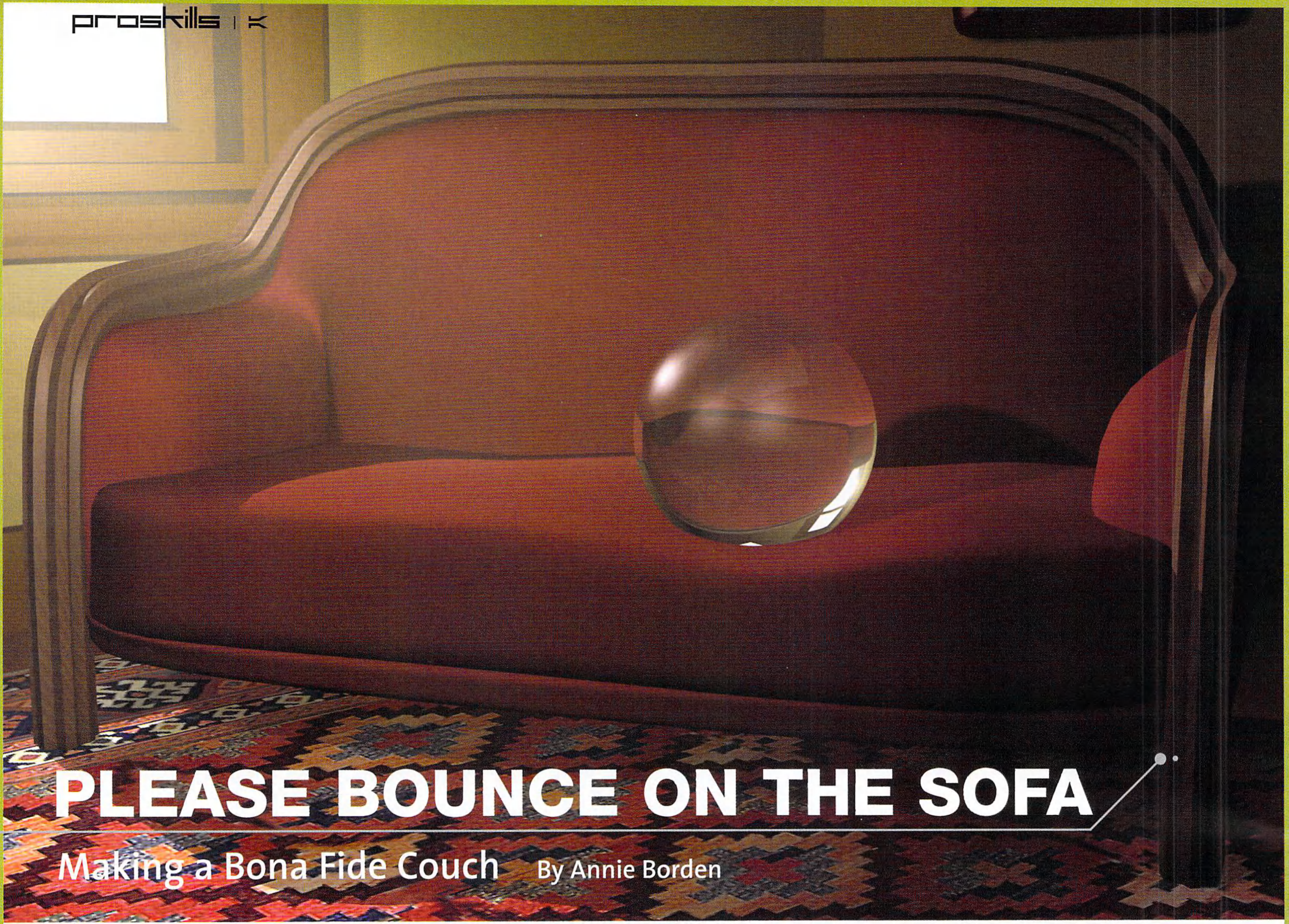

PLEASE BOUNCE ON THE SOFA

Making a Bona Fide Couch

By Annie Borden

Every respectable animator of leisure needs a cushy couch to crash on after a grueling session of pounding pixels. And even the sleekest Cerberean starship wouldn't be civilized without a plush sofa in the parlor. So commandeer your most comfortable chair and let's create a chesterfield.

We will begin in Modeler. (I am using LightWave 6.5 with the default user interfaces for both Layout and Modeler.) To give you an idea of what we will be building, take a look at the image of my final couch.

When modeling, if you create objects to their correct dimensions, they will load into Layout properly proportioned to other objects and your environment. My sofa at home measures 3 feet high by 70" long. The top of the seat is 15" from the floor and the seat cushion is 21" deep.

Generally, I prefer to model with metric measurements because calculations are much easier. However, for this project, I'm creating the sofa template in feet and inches. If your display is set to metric, choose Display/View Options (or the keyboard shortcut, [d]) and change the Units to English/Inches.

PRO GOAL.
Create a soft, sumptuous sofa that sinks and squashes down when you sit-and bounces back.

PRO TOOLS.
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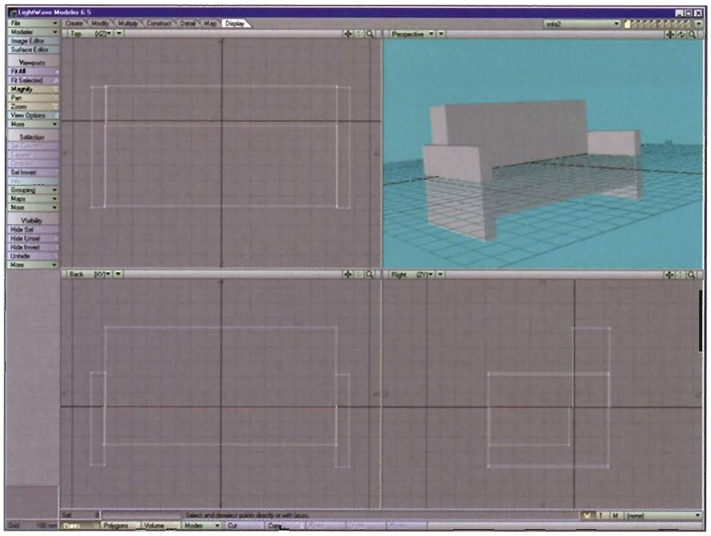


Figure 1.

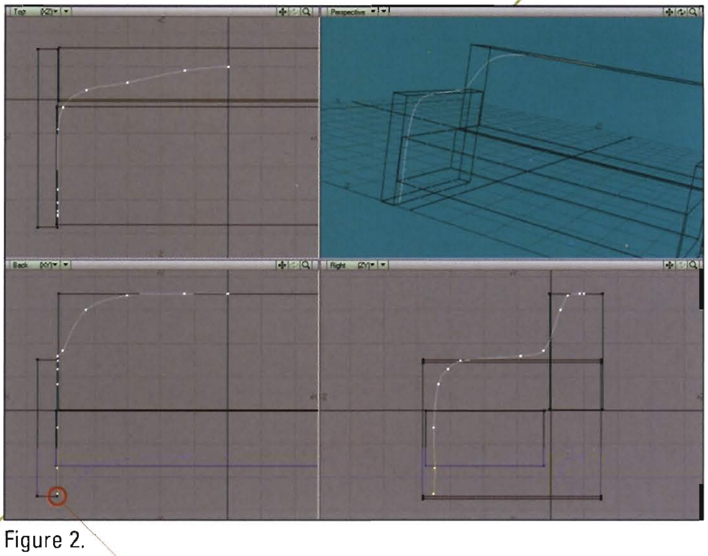


Figure 2.

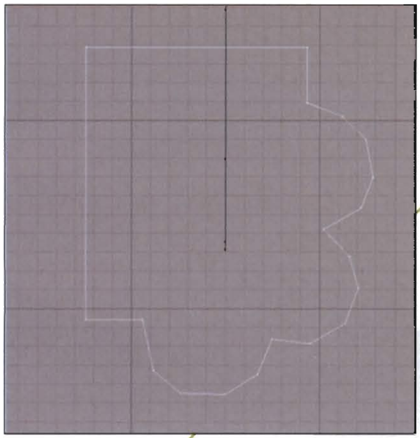


Figure 3.

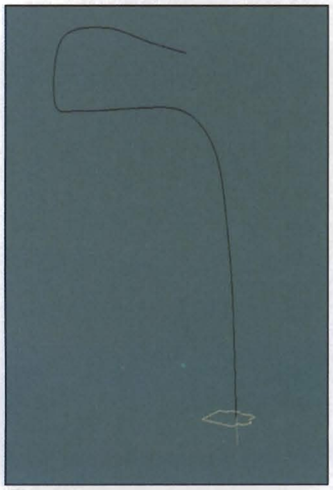


Figure 4.

1. In Layer 1, make a template for the general shape and size of your sofa: four boxes to represent the back, the seat, and the arms. Figure 1. Check your grid size for sizing and use the measuring tool [CRTL Q] for more precision. Be sure to keep everything centered in the LW universe. Afterwards, go back to [d] and change the units to SI.

CREATING THE CARVED BENT FRAME

2. We'll return to the boxes later. Right now, we will use them as a guide for the bent wood frame, which we will extrude. First, we have to create a spline path that our extrusion will follow.

With the Layer 1 boxes in the background, Create/Sketch the curve in the right window of Layer 2. Since we will be mirroring the other half of the frame, in the top view, pull the end point out to 0 on the X-axis.

If the curve is not smooth enough, select the spline, go to Construct/Subdivide/More/Add Points and add more points. Figure 2. Make a note of the beginning of the curve (THIS IS IMPORTANT). If you have forgotten where you started the curve, look for the very small diamond shape located at the beginning of the spline. (It used to be lots bigger!)

3. In Layer 3, with the spline path in the background layer, create the shape of your "bent" wood. Figure 3. You can customize this shape. Just remember that for rail extrusion, you must use a single polygon only. Carefully, place this shape at the beginning of the curve. Figure 4.

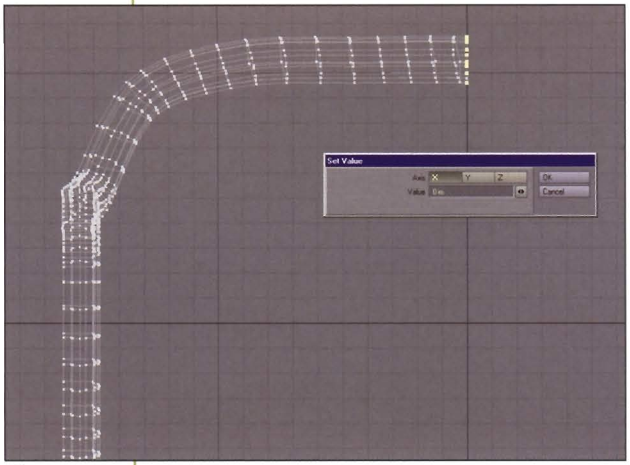


Figure 5.

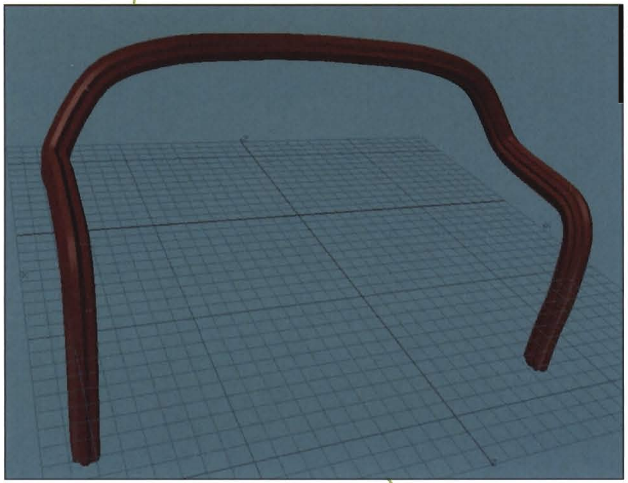


Figure 6.

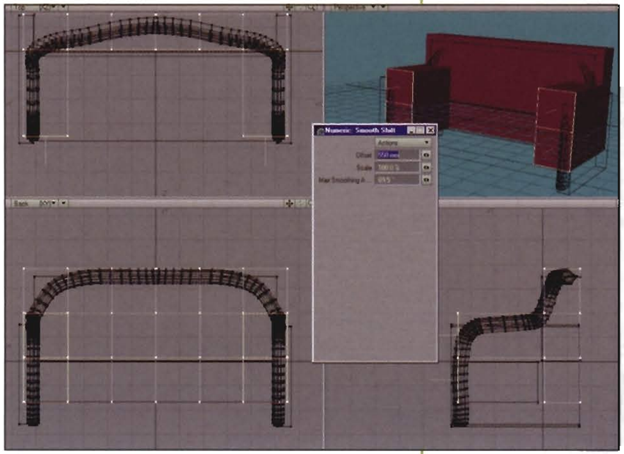


Figure 7.

4. Now, go to Multiply/Rail Extrude. Keep Automatic with Oriented checked. Click [OK]. Wow, you get a lot with this little operation.

Before you mirror this object, make sure those points at the top are lined up. Select the end points, go to Detail/Set Value [CTRL V] and input 0 on the X-axis. Figure 5.

5. Next, Multiply/Mirror [V], Numeric [n], Activate, X-axis at 0, and Merge Points checked. Figure 6.

6. Go to Detail/Surface [q] and call this "wooden frame". When you click [Smooth], notice that your frame loses all of its "carved" detail.

To restore the detail, go into the Surface Editor, choose the surface name "wooden frame" and change the numeric value of the smoothing threshold from the default of 89.5 to a number between 40 and 45. Look at your model. If it's not what you want, adjust the threshold number to allow smoothness in the general curve, yet keep the detail in the carved part. All right, we have our beautifully curved and carved wood frame.

CREATING THE SOFA

PROTECHNIQUE. We will use SubPatches [Tab] to create the sofa cushions. SubPatching requires that your polygons have no fewer than 3 sides and no more than 4. If you get an error message, use Polygon Statistics [w] to find the unacceptable polys. If you have polys made of 1 or 2 vertices, click on [+] to select them and then delete them.

7. In Layer 4 (what would we do without all these layers?), create a box for the back of the sofa (using Layer 1's measurements). With the arrow keys, divide the box into 6 segments on the X-axis and 3 segments on the Y-axis. Keep the wooden frame in the background layer so that you can see the contours. Multiply/Smooth Shift [F] the bottom polygons on the right and left sides to make the sofa arms. Figure 7.

If you want an object to be harder and more squared off, create more segments. The closer the points are to one another, the more detail there is. Conversely, the farther apart the points are, the more rounded the polygons are.

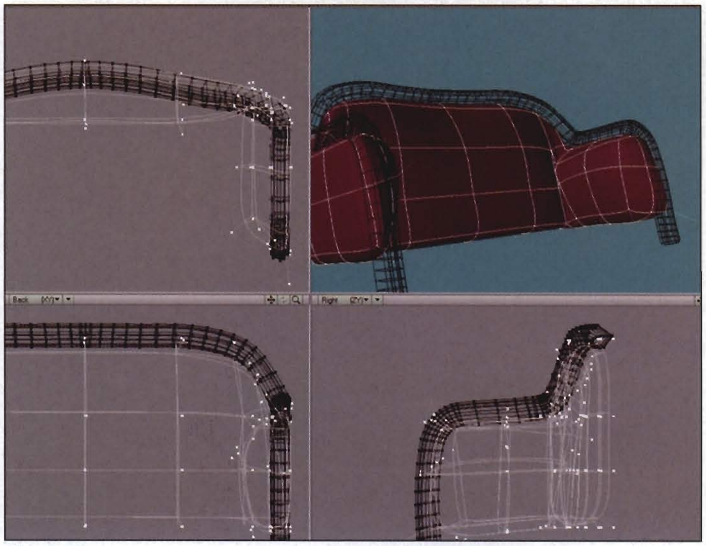


Figure 8.

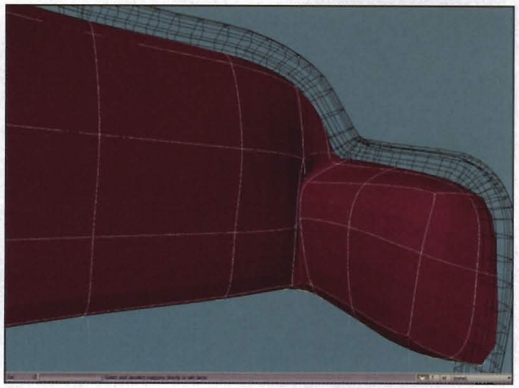


Figure 9.

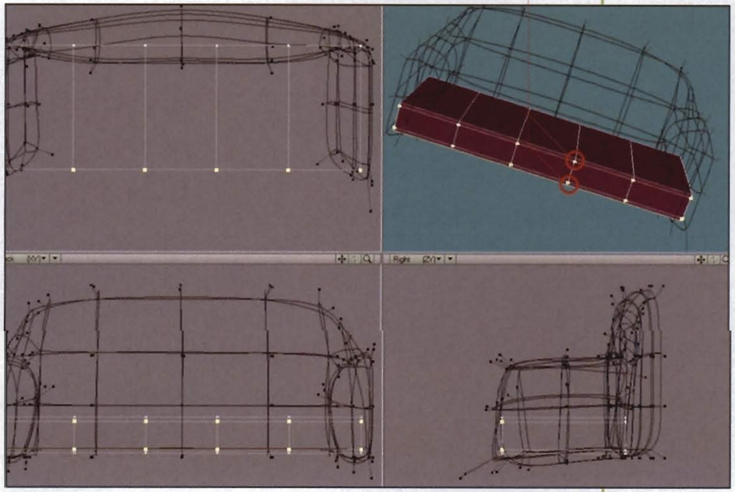


Figure 10.

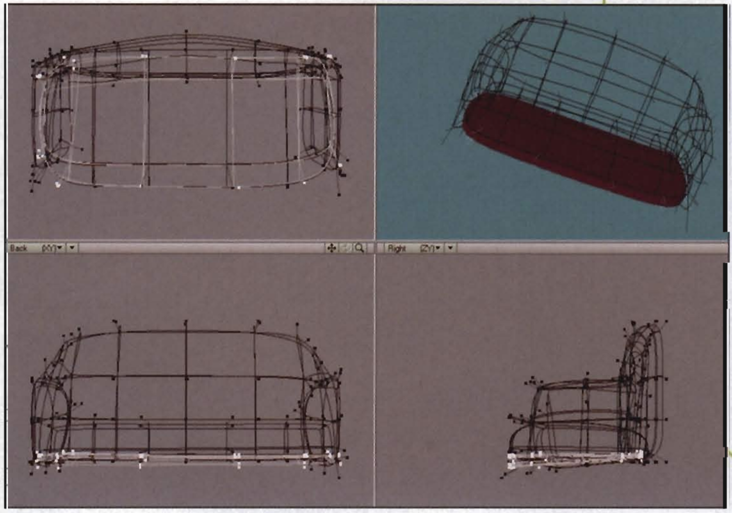


Figure 11.

8. Hit the [TAB] key to go into the SubPatch mode and begin pulling points with the drag tool [CTRL t] to conform to the shape of the frame. Zoom in closely to inspect your work. Figure 8. To really see what you are doing, expand the perspective window to full screen, with both layers selected. Also, make a practice of alternating between the Smooth Shade and Wireframe Shade in the Perspective window. Figure 9.

9. Return to the four views and Knife the arms to achieve more geometry. Be careful to pull the Knife tool past all the points so that you don't accidentally make a polygon with more than 4 sides. (If I do create a more than 4-sided polygon, I find it simplest to just undo my actions to the pre-Knife condition and then try again.)

Keep pulling those points. You may have to Knife once more to make the crease between the back of the sofa and the arms. For convenience, you can Knife in an open space, and Move [t] the newly created points in. If you hold down [CTRL] while moving points with your mouse, you constrict the movement to one axis.

10. You may still need more geometry in the curve of the arms to make a better fit. If so, you can use the BandSaw tool to divide difficult areas where the Knife is impossible to use.

Select the two top polygons on one arm, go to Construct/Subdivide/BandSaw. Choose Auto, Enable Divide, Edit, OK. Since this step will enhance the existing shape, start with the best shape possible before using the tool. Continue to pull those points until you come up with the shape that you want that fits well in the wooden frame. Don't forget to do the same thing to the other side. Or, better yet, delete the other side and mirror the properly fitted side.

Give this a surface name of "Sofa Cushions". I made mine a burgundy color and smoothed the surface.

SEAT CUSHIONS & FEET

11. With the frame, the back and the arms in the background, create in Layer 5 one long seating cushion. Once again, start with a box, using the arrow keys to create 5 segments on the X-axis and 3 segments on the Y-axis. Move the inner row of points toward the edges to square up the cushion. Figure 10.

Hit the [Tab] key to switch to the SubPatch mode and begin pulling points to make it conform to the shape of the arms and back. Leave some room on the bottom because you will make a base for the cushions to rest upon.

12. Make a box fitting under the cushions and lining up with the bottom of the arms. Give it 5 segments on the X-axis and 2 segments on the Y-axis. Conform it to the cushion's shape in the SubPatch mode. Figure 11.

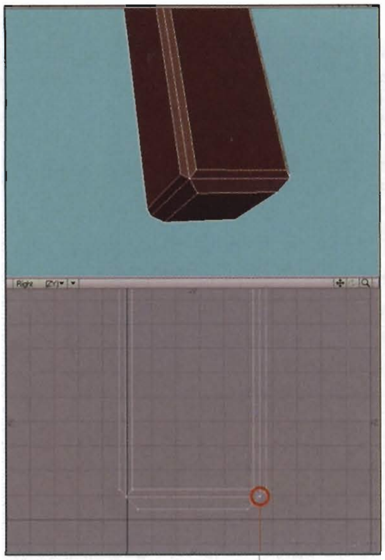


Figure 12.

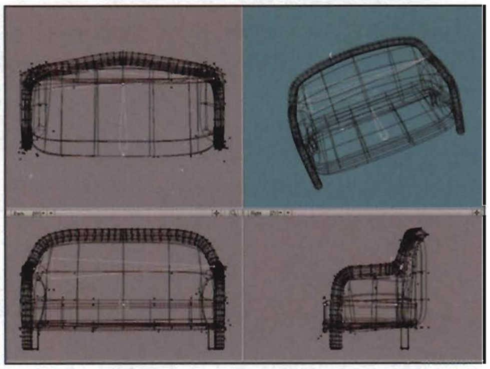


Figure 13.

13. If you look at my finished couch you will see that the wood frame in the front extends down past the base to form the front feet of the sofa. So, to finish the model we need to make the two back feet (actually we'll make one and Mirror it). Go to Layer 6, keeping the rest of the sofa in the background layers. I matched my back leg to the box shape of the frame in the front. I Beveled the four vertical sides of a box 3mm on the inset and 3mm on the shift.

Since the leg still looks plain, select the bottom polygon and Bevel it to give the leg a rounded bottom. Figure 12. Do the same with the frame legs on the front. Place the back leg under one of the rear corners of the sofa and Mirror it. Save everything.

Create a new object and copy and paste the wooden frame, feet, back and arms, cushions and base into one layer. Save again, preferably with another name. You know that you can't save too often.

ADDING BONES

Why add bones to a sofa, you ask? Because when your digital couch potato flops down on your soft sofa, it should respond to the weight. Your scene will be more realistic.

14. One great new feature of LightWave [6] is Skelegons. Skelegons are created in Modeler and are polygons that look like bones. As polygons, they can be rotated, sized, moved, mirrored and named. We will be using Skelegons to create our sofa's bone structure. With the sofa in the background, go to Layer 2 and select Create/Skelegons.

Decide where your character will sit on the sofa, and draw out a Skelegon there, running along the Z-axis. Skelegons can be treated like polygons until they are converted in Layout, so move the bone so that it is just inside the seating cushion. We need to create another bone to hold the sofa still while the seat squishes, so draw another Skelegon along the back's X-axis. Cut the bones and paste them into Layer 1 with the rest of the sofa. Figure 13.

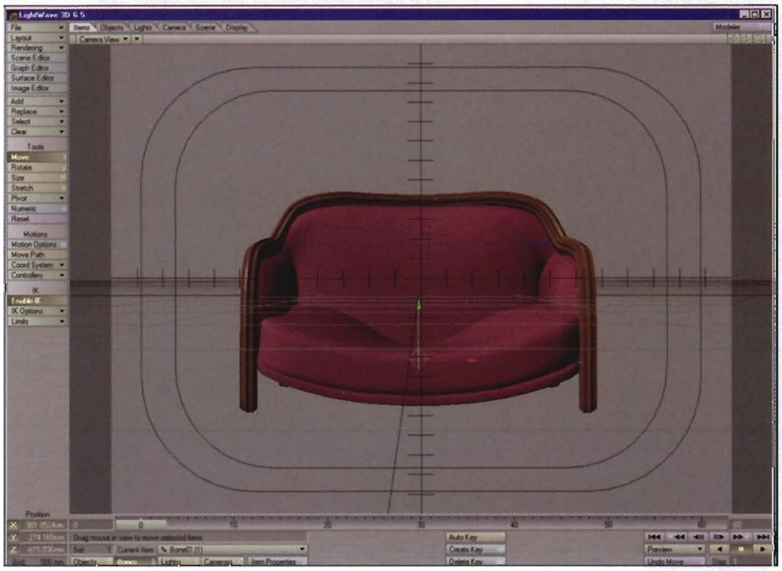


Figure 14.

15. We will do a little experiment to see if we need to add more Skelegons. Save the object, switch to Layout, and load the couch object with its Skelegons.

In Layout, choose Add/Bones/Convert Skelegons into Bones. Immediately the bones are activated. Select the sofa seat bone and pull down on the Y-axis. Figure 14.

Hmmm. Not what you had in mind! So, we better take the floppy furniture back into Modeler for repairs. Close Layout without saving.

16. In Modeler, hit [w] to open the Polygon Statistics panel. Click on [+] next to Skelegons to select them. Cut and paste them back into Layer 2. We will be adding quite a few more bones to stiffen our sofa at the base while making the cushion more responsive.

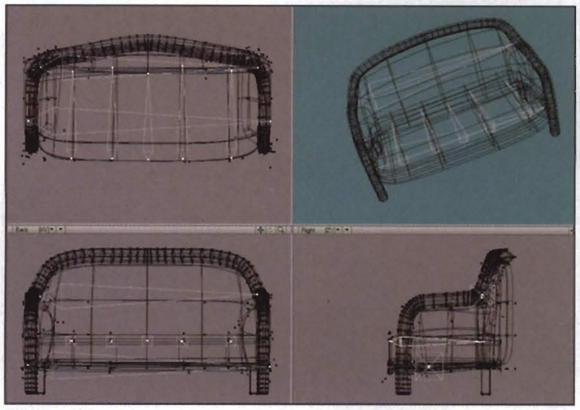


Figure 15.

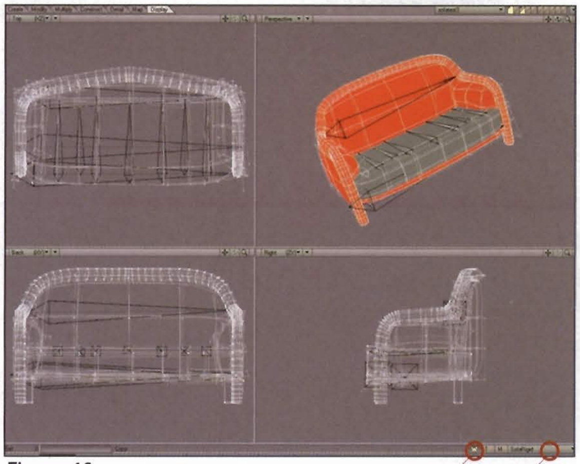


Figure 16.

Before you insert the Skelegons, you may want to add more sections to the cushion, because bones displace points not polygons. Notice in Figure 13 that no points exist in the area of the current cushion bone. If your character's derrière will plop here, select the cushion (Sel Connect "]") and Knife it in that area.

Now, add bones along the Z-axis of the cushion where the points are located. These bones will give you more choice on where you can seat your character. Also, add a big bone along the bottom of the sofa on the X-axis to make the sofa rigid enough to resist the weight of the downward pressing bones. Figure 15.

WEIGHT MAPS

For added insurance, let's use weight maps. If you haven't discovered them, you will love them. We will create the simplest of weight maps.

17. Select only the seating cushion polygons, then click the [W] in the lower-right portion of the interface. In the pull-down menu next to the "M", pick [New] and type in "Sofa Cushion".

Go to the Perspective window, choose the Weight Shade mode from the pull-down menu. You should see the cushion turn red.

Click ["] or Display/Sel Invert to pick the sofa's non-cushion polygons. Click on Weight Map again, choose [New] and name this map "Rigid". These polygons will now be red. Figure 16.

18. Again, cut and paste the Skelegons into the sofa layer and save the object.

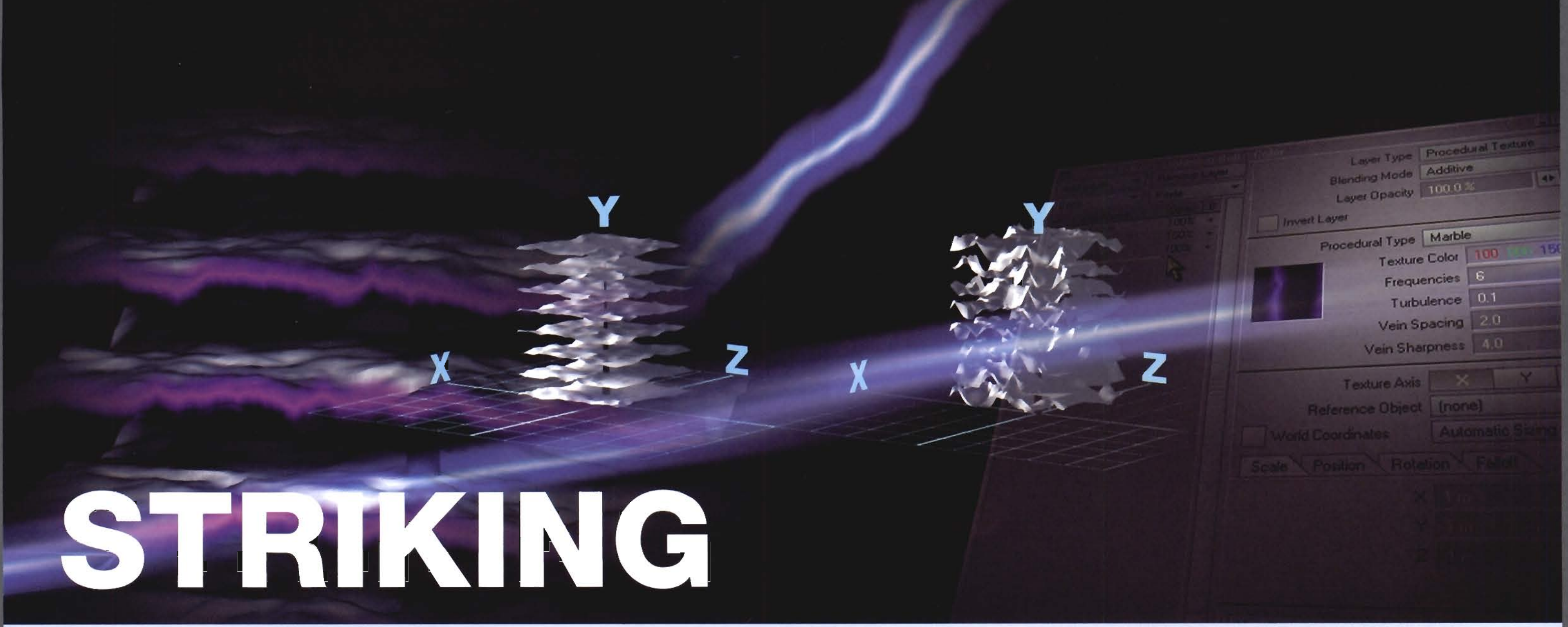
19. Open Layout and load this object. Select Add Bones/Convert Skelegons into Bones and you are almost finished. I like to be on a first name basis with my bones. To apply a name, select a bone, choose Items/ Replace/ Rename Current Item. Give them names such as Sofa Back, Sofa Bottom, Cushion 1, Cushion 2, etc.

Then select each bone and under Item Properties, assign a Bone Weight Map. Give all the cushion bones the "Sofa Cushion" map. Assign the "Sofa Rigid" map to the Back and Bottom bones. Now move the different cushion bones down and up and you can appreciate the animated stuffing you have built into your simple sofa.

If you desire more bounce per ounce, go back into Modeler and add more bones. Go to Polygon Statistics [w], select the Skelegons, cut and paste them into another layer and create additional Skelegons where you need them. Cut and Paste the new bones back into the sofa layer and save the object. Now, in Layout, when you convert Skelegons into bones, you will be adding only the bones you need, not duplicating your original bones.

20. Before you Render your scene, go to the object's Item Properties. Choose Geometry, Object Replacement and change the Subdivision Order to After Bones.

Your virtual characters thank you - they can now relieve their weary flesh on dem soft bones.



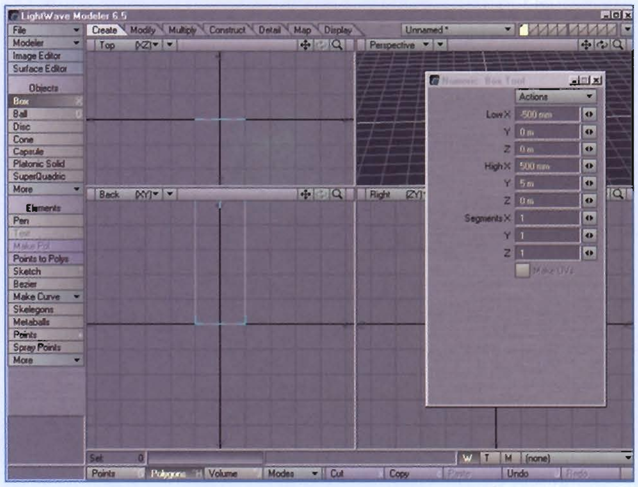
Layer Type Procedural Texture
Blending Mode Additive
Layer Opacity 100.0 %
Invert Layer
Procedural Type Marble
Texture Color 100
Frequencies 6
Turbulence 0.1
Vein Spacing 2.0
Vein Sharpness 4.0
Texture Axis X Y
Reference Object (none)
World Coordinates
Automatic Sizing
Scale Position Rotation Falloff

STRIKING LIGHTNING

Mining the Marble Texture

By Dave Jerrard

Editor's Note: We asked Dave Jerrard if he would share an excerpt from the upcoming book, *LightWave 6.5 Applied*, and share he did. The following tutorial shows in detail how to create a lightning bolt using procedural textures.


LightWave Modeler 6.5
Create
Modify
Multiply
Construct
Detail
Map
Display
Top
Perspective
Back
Right
Box
Ball
Disc
Cone
Capsule
Platonic Solid
SuperQuadric
Pen
Points to Polys
Sketch
Bezier
Make Curve
Skelegons
Metaballs
Points
Spray Points
Numeric: Box Tool
Actions

Low X 500 mm
Y 0 m
Z 0 m
High X 500 mm
Y 5 m
Z 0 m
Segments X 1
Y 1
Z 1

Figure 1. The numeric settings used to create our lighting bolt object.

1. To start this project, we'll need a simple object that we'll use as our lightning bolt. Start up Modeler and click the Box button under the Create tab.

Drag out a box in the viewport labeled "Back" to a size of 5 meters tall and one meter wide. Figure 1. Alternatively, you can hit 'n' on the keyboard to open the Numeric panel and enter the following values:

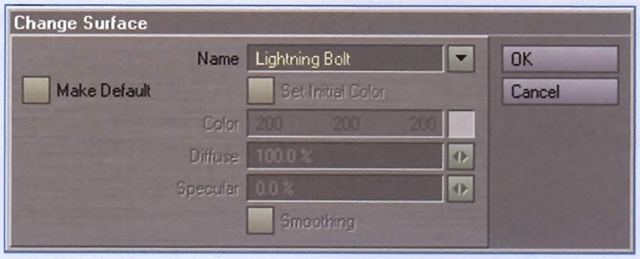
Low	X.	-0.5 m
	Y.	0 m
	Z.	0 m
High	X.	0.5 m
	Y.	5 m
	Z.	0 m
Segments	X.	1
	Y.	1
	Z.	1

Be sure to deactivate the Box tool by clicking the Box button again, or the Points or Polygons buttons at the bottom of the screen before you click anywhere else, or you could find yourself clearing the box you just created!

If you're looking in the perspective view, you may have noticed that you can't see the box. Type 'f' (or click the Flip button under the Detail tab) and the polygon will turn to face us. Now that we have a box, let's give it a surface name.

2. Type "q" to open the Change Surface panel. Type in a name for this surface where it says name, and hit return. Figure 2. Now that our lightning bolt has been modeled and given a surface name, we're ready to make it look like lightning.

Note: LightWave 6.0 added a new tool called the hub, which is, at its simplest, a link between Layout and Modeler, allowing them to pass information to each other. Previously, this was possible through the use of the Get and Put (and more formerly Import and Export) commands in earlier versions of Modeler. The hub, when running adds a Modeler button in the top left corner of the Layout screen, and allows automatic updating of objects



Change Surface

Name: Lightning Bolt

☐ Make Default

☐ Set Initial Color

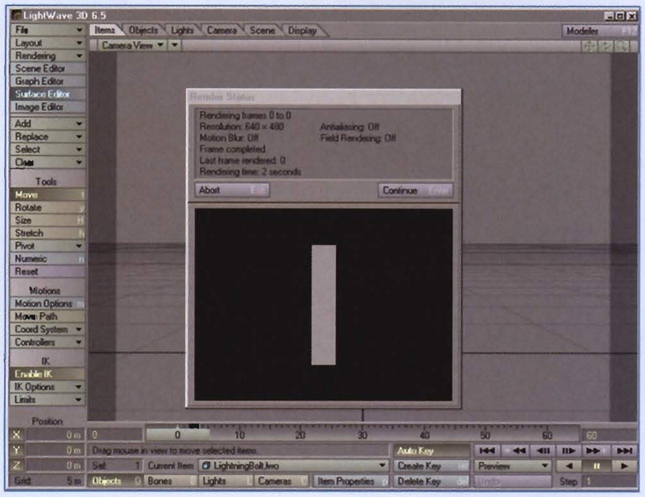
Color 200 200 200

Diffuse 100.0 %

Specular 0.0 %

☐ Smoothing

Figure 2. The Change Surface panel, where we create and name new surfaces.



Render Status

Rendering frames 0 to 0
Resolution: 640 × 480
Antialiasing: Off
Motion Blur: Off
Field Rendering: Off
Frame completed
Last frame rendered: 0
Rendering time: 2 seconds

LightWave 3D 6.5
Items
Objects
Lights
Camera
Scene
Display
Modeler
Camera View
File
Layout
Rendering
Scene Editor
Graph Editor
Surface Editor
Image Editor
Add
Replace
Select
Clear
Tools
Move
Rotate
Size
Stretch
Pivot
Numeric
Reset
Motions
Motion Options
Move Path
Coord System
Controllers
IK
Enable IK
IK Options
Limits
Position
Abort
Continue
Drag mouse in view to move selected items.
Current Item
LightningBolt.lwo
Auto Key
Create Key
Delete Key
Preview
Step
Objects
Bones
Lights
Cameras
Item Properties

Figure 3. A quick test render to give VIPER the info it needs to do its job. From this point on, the brunt of the work will be handled through VIPER.

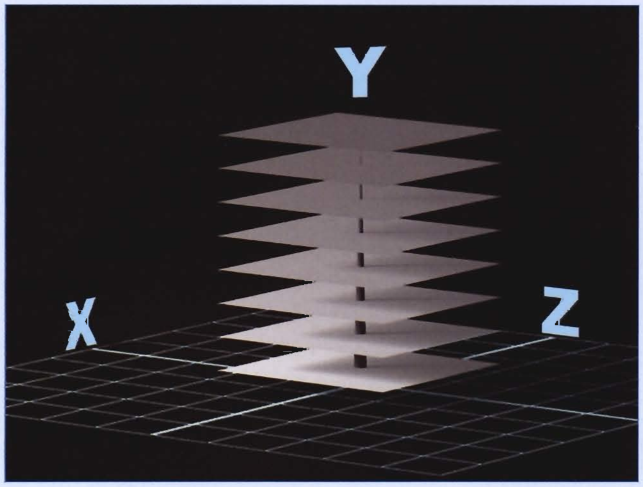


Figure 4. A 3D representation of the Marble texture, shown here as being mapped on the Y axis. Each square of the grid is one meter and the spacing between the sheets is half a meter.

when they're modified in one program. If you have an object in Layout and then open Modeler, the selected object will automatically be opened in Modeler, ready to edit (All other objects will also be accessible as well, via the object list pop-up menu in Modeler). If you modified that object at all, when you return to Layout, the modified object will automatically be loaded back into Layout. However, the object file on disk will NOT be affected unless you re-save the object from either program. Also note that this object sharing will only take place with objects that already exist on the disk. Our lightning bolt object, since we haven't saved it yet, cannot be shared yet. I personally recommend using the hub for this feature and the next one I'll be covering soon. (By default, LightWave is set up to use it, and requires a special command to run without it, which generally, only advanced users would be using.)

Save this object as LightningBolt.lwo by clicking the File button at the top left and selecting Save Objects As, or by typing "S". Now we can go to Layout for the rest of this project.

3. Open Layout and load the LightningBolt object we just created by clicking the File button and selecting "Load> Load Object...". (You can also load objects with the Add button under the Items tab, or by simply typing "+".)

Note: Alternatively, you can click the small triangle button in the top left corner of Modeler and select "Send Object to Layout", which will pass it through the hub, then to Layout, saving you the hassle of searching for the object on your disk.

4. Now that we have the object loaded, let's get VIPER set up. Open the Surface Editor and click the VIPER button. We don't have to worry about camera position since LightWave automatically adjusts the camera's position to fit objects in its view when they're first loaded, UNLESS you've previously created a keyframe for the camera manually. This position will work fine for our purposes for now.

Hit F9 to create a test render and feed VIPER the info it needs about our lightning bolt. Figure 3.

5. Hit the Esc key to close the Render Status window and then move over to the VIPER window and click the Render button there. Now we can start surfacing. The first thing we want to do is create a basic shape of our lightning bolt. To do this, we'll use the Marble procedural texture, so click the T button for the Color channel and then select Procedural Texture for the Layer Type in the Texture Editor panel that opens up.

Note: This is slightly different than how LightWave 6.0 worked. In 6.0, the same window was used for both the Surface Editor AND the Texture Editor. This new method, while popping yet another window onto the screen, allows you to edit base values in the Surface Editor (even for other surfaces), while at the same time allowing you to change the texture settings, without having to repeatedly switch between two modes. If you click another texture button for another surface or attribute, the Texture Editor will switch to that texture, without losing the texture you had there before. It'll take a short time to get used to, but it will save a few mouse clicks during surfacing, which can really add up, allowing your mouse to live a longer life.

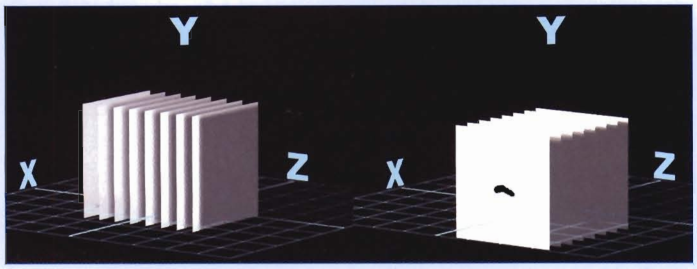


Figure 5. The same stack of paper mapped on the X axis, left, and on the Z axis, right.

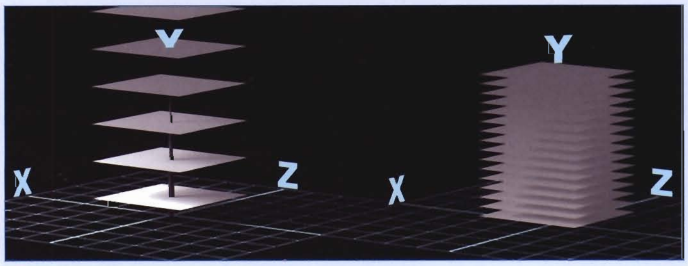


Figure 6. The same stack of paper, but with a spacing of 1 meter on the left and 25 centimeters on the right.

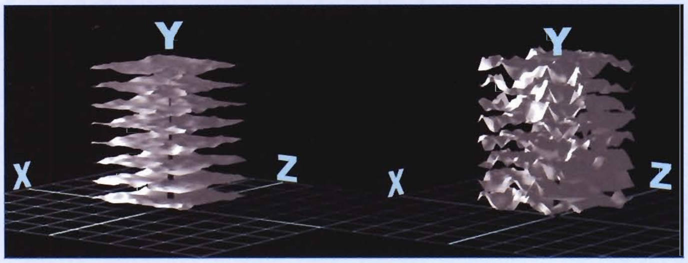


Figure 7. A 3D representation of the effects of Turbulence. The higher the value, the greater the effect. Note that the pattern is the same. Only the amplitude is increased with higher settings.

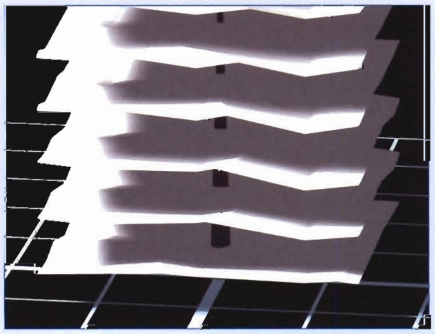


Figure 8a. A Frequencies setting of 1 creates a very simple looking disturbance in the paper. Note the grid-like appearance that's visible in the creases at this low setting.

6. Select Marble as the Procedural Type by clicking the pop-up button, which will originally be set to Turbulence.

Now before we go too much further, we should get a better understanding of how Marble works and what those numbers do. Marble is best thought of as a stack of paper on a skewer, with each sheet of paper representing a vein. Figure 4. The skewer represents the Texture Axis. The space between the sheets of paper is the Vein spacing, and the base of the skewer is the texture center. Turbulence is how crinkled or flat each sheet of paper is. Frequencies is how many crinkles there are in a given area, and the Texture Scale defines the size of that area. The texture we'll see on the surface of an object is the shape of these sheets of paper at the point they would be intersected by the object's surface, if they were placed inside it. Got that? Ok, let's break that down a bit.

We'll start with the Texture Axis. We can map a texture along the X, Y or Z-axis, so by pointing our skewer along one of these axes, we can see which way our veins will run. If the skewer is vertical, or mapped on the Y-axis, we can see that the sheets of paper will to lie horizontally, as in Figure 4. If we mapped it along the X-axis, then they would appear edge-on. Looking at them on the Y or Z-axis, and mapping them on the Z-axis will make them appear face-on on that axis, but they'd still be edge-on vertically. Figure 5.

The Vein Spacing is the distance between sheets. A lower number means the sheets are packed closer together and a higher number means they're further apart. Figure 6.

Turbulence tells the paper how crinkled it is. A value of 1 means the paper is crinkled so much that each sheet is able to touch the sheet next to it. A value of 0 means the sheet is flat and the texture will appear to be a series of parallel lines. Basically, this is a percentage of the Vein Spacing, so a value of 2 would mean the space that the crinkles cover is double the space between the sheets (200%). This means that each sheet will crinkle enough to reach the sheet on the opposite side of an adjacent sheet. They won't actually pass through one another since the sheets do follow a common pattern. Where one sheet pushes up, the next will bend to allow it, and so on, like a stack of damp paper. Figure 7.

The effect of the Frequencies setting is a bit harder to grasp at first since it's tied in with the Texture Scale. What it does is define the number of crinkles in a given area, which is defined by the Texture Scale. Think of the scale as a 3D grid that runs through the texture. As each sheet, or vein, of the texture passes from one section of this grid to the next, it's deformed. The frequencies basically define how many times the texture is deformed in that area. With a texture scale of 1 meter for example, the texture will be deformed, or creased once, every meter (Figure 8a) while a value of 8 means there will be 8 deformations. Figure 8b. With a larger texture size, these deformations will be spaced further apart, creating smoother flowing patterns, while a smaller size will be tighter, and create a more diffused, swirly, or even grainy appearance. The amount of turbulence will still define how much area this deformation can cover. Figure 8c shows the appearance of the marble texture these examples illustrate.

Vein Sharpness is probably the most straightforward value, next to color, but still bears a bit of explanation. Marble veins ALWAYS have soft, or blurry edges to them, no matter how sharp you try to make them. What the Vein Sharpness really does is control the thickness of these blurry lines. A value of

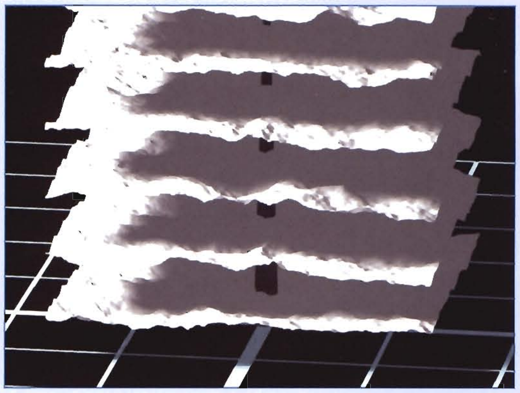


Figure 8b. A Frequencies setting of 8 follows the same general pattern as the Figure 8a, but breaks up the grid effect so it's no longer visible.

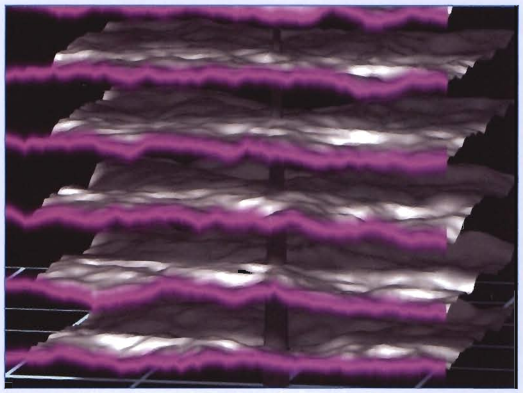
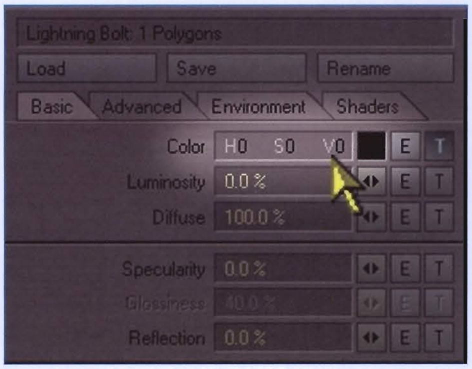


Figure 8c. A 3D representation of the marble texture overlaid with the real thing, illustrating how the texture would look on a real surface. The settings used here were a Vein Spacing of 0.5 meters, a Vein Sharpness of 4 and a Frequencies of 8. Texture size was 1 meter and the Turbulence was set to 0.5.



Lightning Bolt: 1 Polygons

Color H0 S0 V0

Luminosity 0.0 %

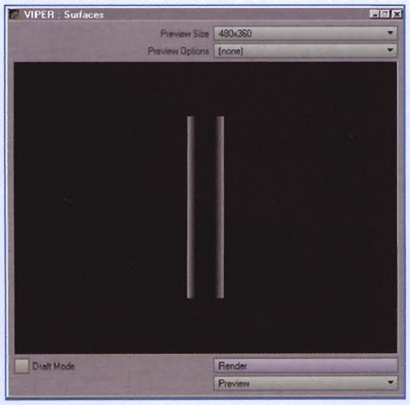
Diffuse 100.0 %

Specularity 0.0 %

Glossiness 40.0 %

Reflection 0.0 %

Figure 9. Right-clicking on the Color values will toggle between RGB and HSV color models



VIPER : Surfaces

Preview Size 480x360

Preview Options (none)

Figure 10. Since the center of the Marble texture lies between two veins, we're left with a vein running down each side of the polygon, rather than one running down the center.

1 will cause the blurry edge of these lines to be the same thickness as the Vein Spacing, while a value of 2 will be half. The default value of 4 is, as you might have guessed, one quarter the Vein Spacing. Values lower than 2 will actually cause the veins to overlap, so they'll tend to obscure any details below them. Higher values will make the lines thinner, with the side effect of making them appear spaced further apart as well. Generally, you'll want to stay with values between 3 and 20 since anything higher starts to fall between the pixels when you render, causing unwanted flickering in animations, or moiré problems for stills.

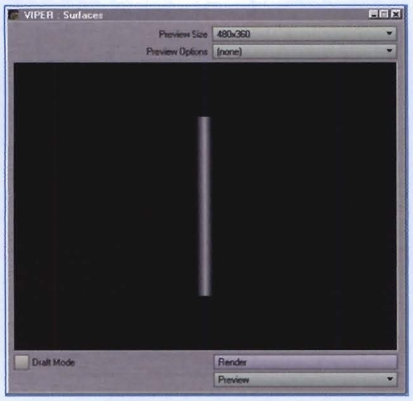
6. Now that we have a better understanding of how this texture works, we'll continue on with our lightning bolt. The next thing we want to do is place a marble vein on this polygon so it runs vertically down the center of it. Remembering the way the texture works in Figure 5, we know that we'll need to map it on the X-axis, since our polygon is facing the Z-axis. Click the X-Axis button and the VIPER window will automatically update with the change. We won't see much yet because the color of the texture at the moment is very similar to the base color, so go back to the Surface Editor window (you won't have to close the Texture Editor for this), and change the color to black. A quick way to do this is to click on one of the color values with the right mouse button, which will change them from RGB values to HSV (Hue, Saturation and Value), then dragging left on the V value until it reads zero. Figure 9.

8. Now we have some light colored veins running vertically down a black polygon, but they're a bit squiggly looking. Go back to the Texture Editor and lower the Turbulence setting to 0 to straighten them out. We still have too many veins on this panel so we need to space them out a bit. Our polygon is a meter wide, so to get a single vein for fill it, we need to use at least a meter for our vein spacing. Go back to the Texture Editor and change the Vein Spacing to 1. VIPER will once again update, but will reveal what looks to be the exact opposite of what we're after. Figure 10.

This brings us to one last detail we need to know about Marble. The texture center is always halfway between two veins. To place a vein exactly where we want it, we need to either add or subtract half of the Vein Spacing amount to the texture's Position value on the axis it's being mapped on. This will shift the veins along that axis enough that they'll appear where we want them.

9. Click the Position tab at the bottom of the Texture Editor and set the value for the X-axis to 0.5 meters. This will immediately adjust the texture so we now have a vein running down the center. Figure 11. This also pushes the adjacent veins off the edge of the polygon where they can't be seen, unless we crank up the turbulence too much again. If we do, then the veins to either side can start creeping onto the polygon and spoil the effect. To prevent this, we'll increase the Vein Spacing to 2. This will also have the effect of making the vein we want appear wider, and shifted to the side. Remember, to center a vein, we need to offset the position by half of the Vein Spacing. Since we just changed that spacing, we need to change the offset again. Increase the X-axis position to 1 meter, and all will be fine again.

Note: Changing the Vein Spacing not only affects the vein positions, but also their apparent thickness. If this is changed after the other settings are set, you'll quite likely have to adjust the Vein Sharpness to compensate. Luckily, they can both be adjusted by the same factor, so if you double the spacing, you can double the sharpness as well. Turbulence, however, will need to be

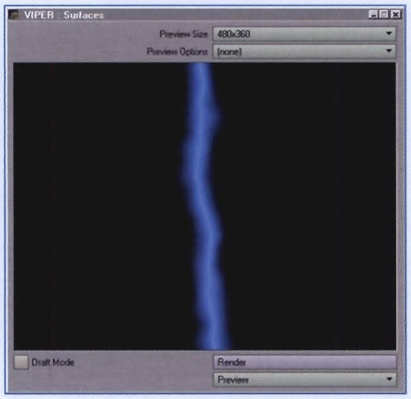

VIPER : Surfaces

Preview Size: 480x360

Preview Options: (none)

☐ Draft Mode

Figure 11. Adjusting the texture's position by half the Vein Spacing value aligns it correctly, so we now have a single vein running vertically down the center of our object.

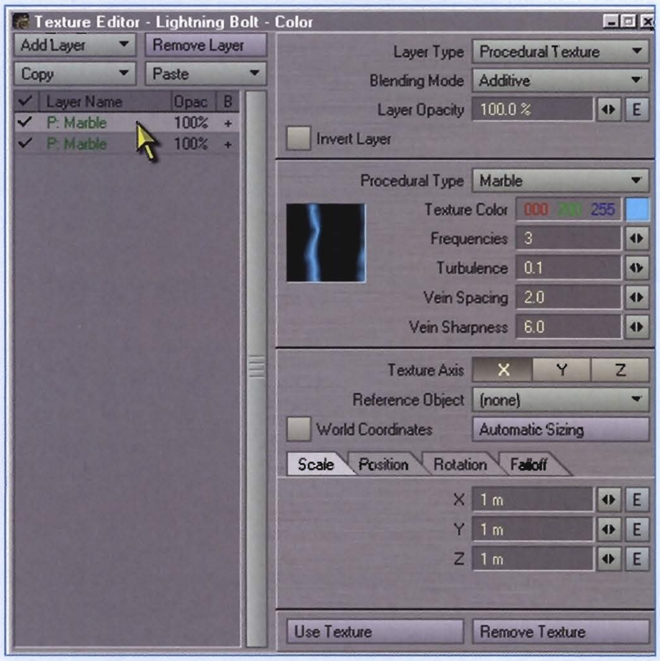

VIPER : Surfaces

Preview Size: 480x360

Preview Options: (none)

☐ Draft Mode

Figure 12. A closer view of the lightning bolt, now with some color and turbulence added. Note that the texture is running into the edge of the polygon in this view.


Texture Editor - Lightning Bolt - Color

✓	Layer Name	Opac	B
✓	P: Marble	100%	+
✓	P: Marble	100%	+

Layer Type: Procedural Texture

Blending Mode: Additive

Layer Opacity: 100.0 %

☐ Invert Layer

Procedural Type: Marble

Texture Color: 000 200 255

Frequencies: 3

Turbulence: 0.1

Vein Spacing: 2.0

Vein Sharpness: 6.0

Texture Axis: X Y Z

Reference Object: (none)

☐ World Coordinates

X: 1 m

Y: 1 m

Z: 1 m

Figure 13. The newly created texture layer, added on top of the previous one, ready to be edited further.

adjusted the other way. Doubling the spacing would mean you'd have to cut the Turbulence by half. Since we haven't set the Vein Sharpness or turbulence yet, we don't have to worry about it right now.

This still doesn't look like much of a lightning bolt, so let's start adding some detail.

10. One of the things most people know about lightning is that it's bright, so let's make this bolt luminous. Go back to the Surface Editor and increase the Luminosity to 100%. Lightning is also not affected by external light, so we can eliminate the Diffuse value while we're here as well. Drop that down to 0%.

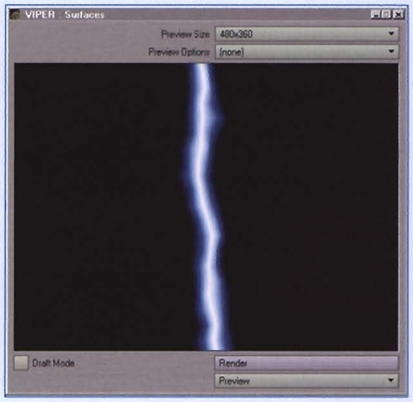
Note: Many luminous effects that you'll tackle in LightWave will have this trait in common. Unless you want the effect to be shaded by a light source (and there will be times), a luminous surface should have no diffuse value since it's simulating a light-casting surface. Fire, for example, does not reflect light from a flashlight pointed at it. Instead, the flashlight will shine straight through it and the only light you'll see coming off the flames is from the fire itself.

11. Now that our lightning bolt is luminous, let's give it some more electric coloration. Electrical sparks, being high-energy releases, tend towards the blue end of the spectrum (fire is a lower energy form, and tends towards the red end of the spectrum), so we'll make a blue lightning bolt. (Lightning can actually appear in many colors, depending on the gasses it's flowing through, but in general, people expect it to appear blue. We aim to please sooo...) Go back to the Texture Editor and change the color for the marble to a light blue. RGB values of 0, 150, 255 are a good start. This will now give us a soft, light blue line, but lightning rarely ever travels in a straight line. Increase the Turbulence to 0.1 to get a better looking bolt. Figure 12.

You will notice that the texture is starting to get clipped at the sides of the polygon because it's being deformed too far. This can easily be fixed by either reducing the turbulence or by increasing the Vein Sharpness. The brightest section down the center looks nice, so we'll leave the turbulence alone, and just increase the sharpness to 6.

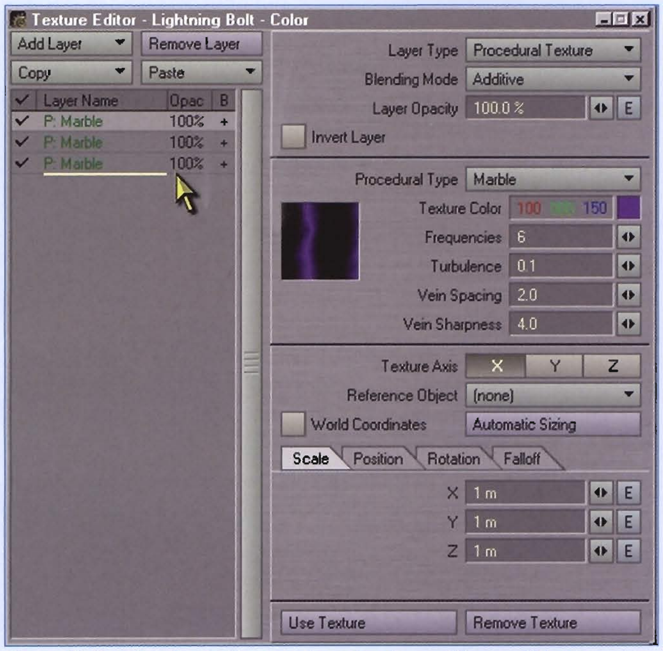
So far, it looks like a wiggly blue line. What we need is to make the center a bit brighter. We can do that by adding a second texture layer.

12. We can add an additional layer to a surface in a couple ways. First, we could simply create one using the Add Layer button, or we can copy an existing one and paste it in. Since we're going to just add another layer of marble to this, we can save ourselves a bit of work by just copying the settings we already have and use those. Click the Copy button in the upper left area of the Texture Editor and select Current Layer from the pop-up list. Now click the Paste button and scroll down to the Add to Layers option in that list. You should now have two entries in the list below those buttons, both labeled P: Marble. Figure 13. The P in that list means that layer is a procedural, followed by the type of procedural, Marble. They should both have a check mark beside them, indicating that both layers are active. We'll get to the other two columns later, but for now, select the top layer by clicking on it. This is the one we just added, and it's going to be our "hot spot" of the lightning bolt.



Preview Size: 480x360
Preview Options: (none)

Figure 14. A second, thinner marble layer over the wider blue layer creates a nice color gradient from white-pink to light blue.



✓	Layer Name	Opac	B
✓	P: Marble	100%	+
✓	P: Marble	100%	+
✓	P: Marble	100%	+

Layer Type: Procedural Texture
Blending Mode: Additive
Layer Opacity: 100.0 %
Procedural Type: Marble
Texture Color: 100 [illegible] 150
Frequencies: 6
Turbulence: 0.1
Vein Spacing: 2.0
Vein Sharpness: 4.0
Reference Object: (none)
X: 1 m
Y: 1 m
Z: 1 m

Figure 15. A yellow line indicates where the dragged layer will be moved to when the mouse button is released.

13. Since this will be the layer that makes our lightning bolt brighter, we'll make it a lighter color. It doesn't need to be white, but it should be very close. Try RGB values of 255, 240, and 255 to give it a slight pink tinge for now. VIPER will still be updating as you make changes, and should now be showing a very bright, thick squiggle that's light pink in the center and facing to a baby blue at the edge. The blue is the first layer we created showing through the second one near the edge.

Texture layers work like layers of glass, each with some kind of pattern painted on them, and then stacked on top of one another. The color we specify in the Surface Editor is the very bottom of this stack, and then each texture layer goes on top, in the same order you see them listed in the Texture Editor. In the case of Marble, each layer only has a pattern of veins, with transparent areas between them. The fuzzy edge of the veins is actually a gradient transparency, fading off to nothing on each side of each vein. The texture layer on the top of the list is the first one we see, and it's completely unobscured. However, it does obscure any textures or color below it, wherever it happens to be adding some color of its own. The center of the vein in these layers is 100% opaque, which is why we can't see the blue color of the second layer showing through the center of the top layer's vein. But near the edge, it's showing through and blending with the top layer. This is a little feature we're going to take advantage of.

14. Since the area around the veins in a Marble layer is transparent, we can force colors from lower layers to show through these areas. If we make the top vein thinner, then we'll see more of the blue vein below. Try increasing the Vein Sharpness to 12 and watch the VIPER window. Figure 14. The overall vein will seem to thin out, but that's due to the fact that there's now less blending going on near the edges. The blue vein itself is still the same thickness, but the pink one is thinner. If we increase the sharpness even more, say to 15, then you'll be able to see more clearly that only the pink line is getting thinner and the blue at the edges is no longer being affected. The lighting bolt is starting to look more like lightning now.

15. The bolt's shape could use a bit of help now since it's looking a bit simple. Increase the Frequencies to 6 and watch as VIPER draws out a more jagged looking pink vein. The blue area also suffers the same problem, so click the second texture layer and increase its Frequencies as well. It's a minor change, but it does break up the larger, smooth areas of gradient color, making it look a lot better. That outer color could be a bit darker though...

16. We'll add a third layer to this texture, but this time it will be used to add a darker color around the veins we already have. Since we haven't copied anything else, we will still have the first layer stored in memory, so we can just click the Paste button again, and add a third layer. This new layer will again appear at the top of the list. Click on it, and drag down with the mouse. A short yellow line will appear, indicating where the texture will be placed when we let go of the mouse button. Move down to the bottom of the list so the line appears immediately below the bottom texture, then release the mouse. Figure 15.

17. Now that this texture layer is positioned, change its color to a darker blue or purple. I've used RGB values of 100, 0, 150 in the figures.

18. The next thing we need to do is to make this vein wider then the two above it. We could just specify a lower Vein Sharpness, but when we origi-

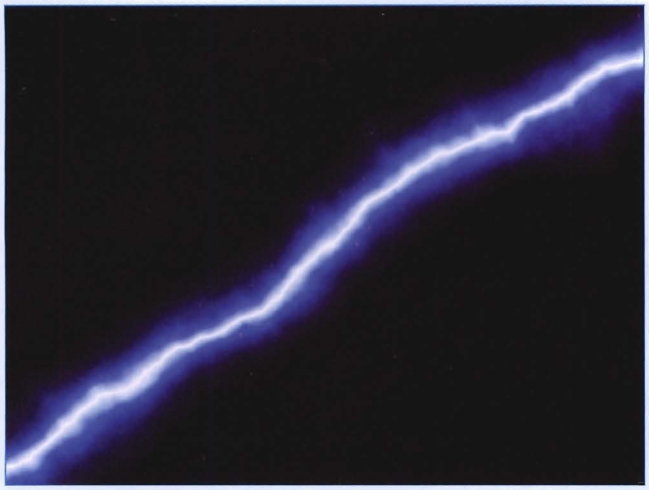
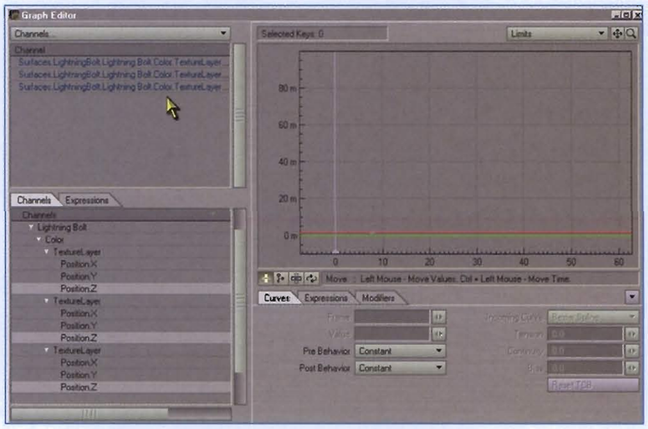


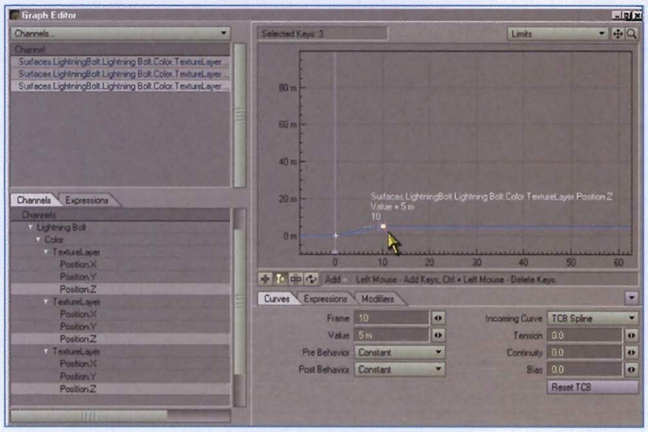
Figure 16. A finished lightning bolt.



Graph Editor
Channels...
Selected Keys: 0
Limits
Channel
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer...
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer...
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer...
80 m
60 m
40 m
20 m
0 m
0
10
20
30
40
50
60
Channels
Expressions
Channels
Lightning Bolt
Color
TextureLayer
Position.X
Position.Y
Position.Z
TextureLayer
Position.X
Position.Y
Position.Z
TextureLayer
Position.X
Position.Y
Position.Z
Move : Left Mouse - Move Values; Ctrl + Left Mouse - Move Time
Curves
Expressions
Modifiers
Frame
Value
Incoming Curve
Bezier Spline
Tension
Continuity
Bias
Reset TCB

Pre Behavior: Constant
Post Behavior: Constant

Figure 17. The Graph Editor, showing the three texture layers and their position channels.



Graph Editor
Channels...
Selected Keys: 3
Limits
Channel
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer...
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer...
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer...
80 m
60 m
40 m
20 m
0 m
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer.Position.Z
Value = 5 m
10
0
10
20
30
40
50
60
Channels
Expressions
Channels
Lightning Bolt
Color
TextureLayer
Position.X
Position.Y
Position.Z
TextureLayer
Position.X
Position.Y
Position.Z
TextureLayer
Position.X
Position.Y
Position.Z
Add : Left Mouse - Add Keys; Ctrl + Left Mouse - Delete Keys
Curves
Expressions
Modifiers
Reset TCB

Frame: 10
Value: 5 m
Pre Behavior: Constant
Post Behavior: Constant
Incoming Curve: TCB Spline
Tension: 0.0
Continuity: 0.0
Bias: 0.0

Figure 18. A keyframe is created for three selected motion channels.

nally created the first layer, it was already getting clipped at the edges of the polygon. Instead, we'll leave it the way is and make the other two layers thinner. Select the middle layer by clicking on it and increase the Vein Sharpness to 10. At this point the bolt will be looking quite nice, but continue on to the top layer and increase its sharpness to somewhere between 20 and 30. Notice that as the sharpness values get higher, there's a less noticeable change between them. When you start working with values higher than 20, you'll save yourself some time by simply going in steps of 10, until you get a result you like. A value of 30 produces a bolt like that shown in Figure 16.

Note: There's no real limit to how sharp you can make a vein, but when they get too thin, you will start having trouble rendering them, unless you use high amounts of antialiasing, without any Adaptive Sampling. Even then, they could still cause unwanted flickering in animations.

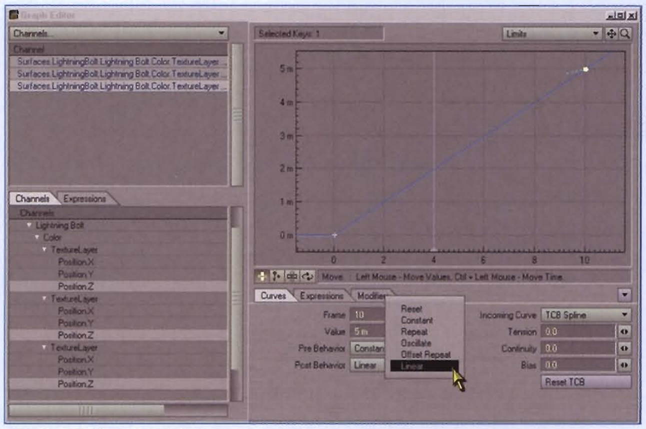
So, we now have a lightning bolt, but it's pretty static looking (Pun intended). We can bring this to life easily by adding some movement to the textures. If you look back at images 6 to 8, you'll see that the marble texture we see is only a slice of a continuous, undulating 3D texture. If we slice through that texture in a different spot, or at a different angle, we'll see a different pattern. Normally, when people think about moving a texture, they only think about moving ALONG a surface, like you might do with an image of text to create a credit scroll. With images, this is pretty much all you can do with them, but procedurals can be moved THROUGH a surface. This will create an ever-changing, living texture.

19. Select the top texture layer in the Texture Editor and click the Position tab at the bottom. Next, click the E button beside the Z position, which will open up the Graph Editor. Move that out of the way if it's covering the Texture Editor. We'll be using the graph to make our texture move, but rather than do the same thing three times, once for each layer, we can edit all three layers simultaneously. Click the middle layer and then click the E button for its Z position. A new entry will be added in the Graph Editor for this layer as well. Do the same for the last layer, so you'll have three listings in the Channels section of the Graph Editor for TextureLayer. Under each will be a list of position channels, one each for X, Y and Z positions.

20. Since we have all three layers listed in this panel, along with their position channels, we can set up a motion for them, but first we have to specify what channels we want to apply motion to. Click once on one of the PositionZ channels, and then, holding down the Ctrl key, click once on each of the other two to select them as well. Next, drag these channels up into the Channel Bin above. Figure 17. Channels in this area can be edited, either in groups or individually.

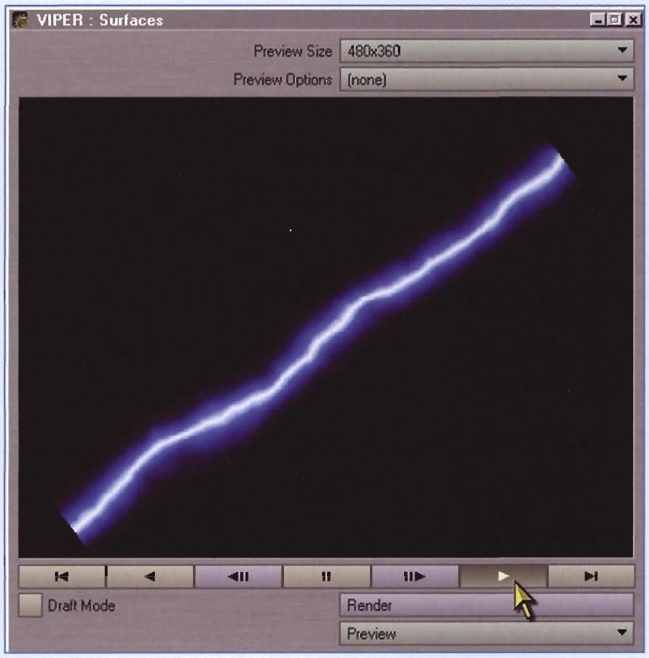
21. Now that we have the channels we want, select them in the Channel Bin by clicking the top one, and while holding the Shift key, clicking the bottom one to select them all. Now that they're selected, we can modify their values all at the same time.

22. Under the actual graph area, click the little Create Key button (it's the second button, which looks like a small key with a plus sign beside it). Now we're ready to add a second keyframe to the graph. Move the pointer up over the mark at frame 10 and click on the line. A small dot will appear with three lines of text describing it. You've just created a keyframe for three motion channels. Figure 18.


Graph Editor
Channels...
Channel
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer...
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer...
Surfaces.LightningBolt.Lightning Bolt.Color.TextureLayer...
Channels
Expressions
Channels
Lightning Bolt
Color
TextureLayer
Position.X
Position.Y
Position.Z
TextureLayer
Position.X
Position.Y
Position.Z
TextureLayer
Position.X
Position.Y
Position.Z
Selected Keys: 1
Limits
5 m
4 m
3 m
2 m
1 m
0 m
0
2
4
6
8
10
Move
Left Mouse - Move Values, Ctl + Left Mouse - Move Time
Curves
Expressions
Modifiers
Reset
Constant
Repeat
Oscillate
Offset Repeat
Linear
Reset TCB

Frame 10
Value 5 m
Pre Behavior Constan
Post Behavior Linear
Incoming Curve TCB Spline
Tension 0.0
Continuity 0.0
Bias 0.0

Figure 19. Selecting Linear causes the graph to continue in a straight line through the last keyframe, rather than stop there.


VIPER : Surfaces
Draft Mode
Render
Preview

Preview Size 480x360
Preview Options (none)

Figure 20. VIPER not only previews textures, but also plays texture animations, allowing you to fine-tune the timing of animated textures, without having to render tests of your scenes.

Now we need to fine-tune it.

23. Click the Move button (the one immediately to the left of the Create Key button) and drag the new keyframe vertically until its value is 5 meters, which you'll see displayed in the second line of text that floats near it. This creates a simple ten frame animation that moves the three texture layers 5 meters on the Z axis... THROUGH the polygon they're applied to. Since we're going to want the textures to keep moving for longer than 10 frames, we need to tell the graph to keep it moving after frame 10. In the section below the graph, there's a tab labeled Curves. Click that, if it's now already selected, and then click the pop-up button labeled Post Behavior. Select Linear from the list, which will make the graph at the last keyframe, continue on in a straight line at the same angle that it was between frames 0 and 10. Figure 19. This is a fast way to give an item a motion that will go on forever, without having to place a keyframe several hundred frames away, and try to figure out what the value should be there to create a smooth flowing motion.

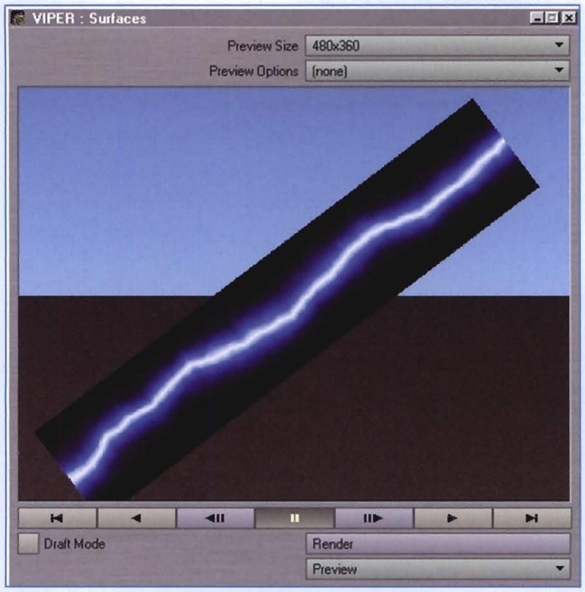
24. Now that we have this motion, let's see how it looks on the lightning bolt. First of all, you don't need to close the Graph Editor, but you may want to move it out of the way of the VIPER window. VIPER not only works well for previewing textures, but it can also show them animated, and that's just what we want to see now. Click the Preview button at the very bottom of the VIPER window and select Make Preview at the top of the list that pops up, then sit back for a few minutes.

VIPER will generate a preview animation showing how the texture moves with the motion we gave it. This is incredibly handy for textures that have built in motion attributes like the Ripples or Smoky textures. Rather than spend a long time rendering actual frames of a scene to test a texture animation, you can use VIPER to test only the surface you're concerned with. After a couple minutes, hit the Esc key to stop the preview generation. Since the motion goes on forever, theoretically, so could the animation. However, VIPER will only preview the range of frames that's specified on the main Layout screen, starting and ending on the frames specified on either side of the frame slider. You'll notice that as soon as you aborted, a set of VCR style controls appeared. Figure 20. Hit the play button on the right to play the animation forward. (The one on the left plays backward).

25. The Lightning bolt does bounce around pretty fast, so let's go back to the Graph Editor and slow it down. Drag the keyframe at frame ten and drag it down to a value of 1 meter this time. You might want to click the Limits button at the top and select Automatic Limits to better fit the keyframes in the window. Once this is done, go back to VIPER and generate another preview.

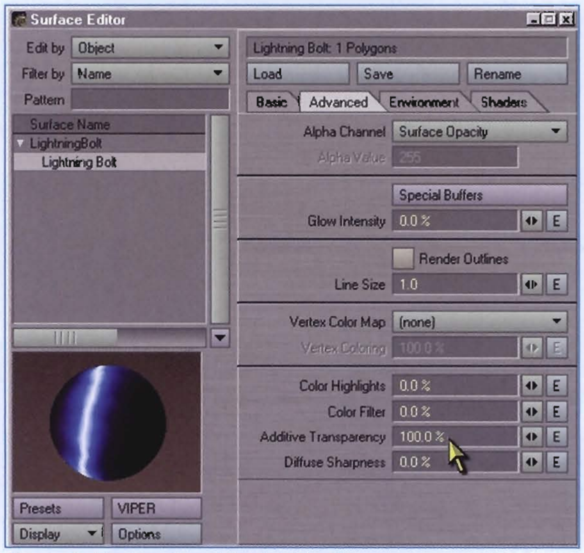
This time it looks much better. If you want, you can repeat steps 20 to 25, but apply them to the Position Y channels to have the texture also move along the length of the polygon.

26. Now that we have a working lightning bolt, there's only one more thing we need to do with it before it's ready to be used in a scene. On the main Layout window, click the Scene tab at the top and then click the Backdrop button under the Effects section on the side menu. This will open a small Effects panel, with the Backdrop tab active. Click the Gradient Backdrop check box, then click the Render button on the VIPER window again, or hit F9 to do a real test render. (If the screen is getting cluttered, you can close the Graph Editor and Texture Editor. You can see why I recommend a large screen.)



Preview Size 480x360
Preview Options (none)

Figure 21. One last thing to fix on the lightning bolt.



Edit by Object
Filter by Name
Pattern
Lightning Bolt: 1 Polygons
Alpha Channel Surface Opacity
Alpha Value 255
Glow Intensity 0.0 %
☐ Render Outlines
Line Size 1.0
Vertex Color Map (none)
Vertex Coloring 100.0 %
Color Highlights 0.0 %
Color Filter 0.0 %
Additive Transparency 100.0 %
Diffuse Sharpness 0.0 %

Figure 22. The location of the Additive Transparency setting.

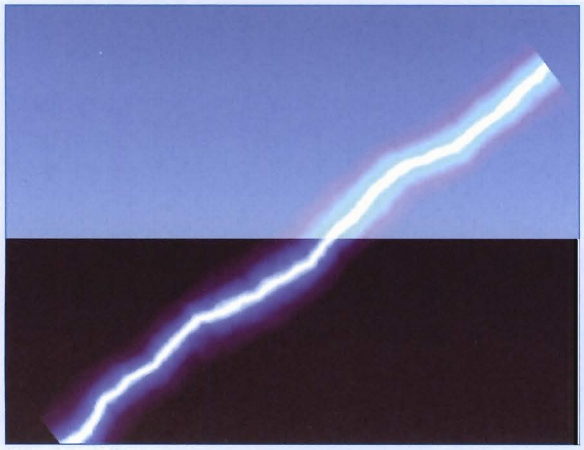


Figure 23. The finished lightning bolt. By making it and Additive surface, it behaves like a real spark would.

You should be able tell pretty quickly what's wrong with this. Figure 21. We need to make all that black area around the lightning transparent, but without affecting the marble texture itself. One way would be to use another marble texture as a transparency map, but there's another way. An easier way. A better way.

27. On the Surface Editor, click the Advanced tab. Near the bottom, there's a setting labeled Additive Transparency. Figure 22. Set this to 100%, then click on the main Layout window and hit F9. You should see the bolt shining brightly over the gradient backdrop, as in Figure 23.

Additive Transparency will not show up in VIPER, which is why you had to hit F9 to do a real test render. In previous versions of LightWave, this was simply a check box called Additive. It works the same way, except now you can control how additive the effect is. Additive Transparency simply takes the value of a point on the surface and adds that value to whatever is behind it. This results in the colors of the additive surface becoming brighter when they're in front of a lighter object or backdrop, but only if the color on the additive surface is not black.

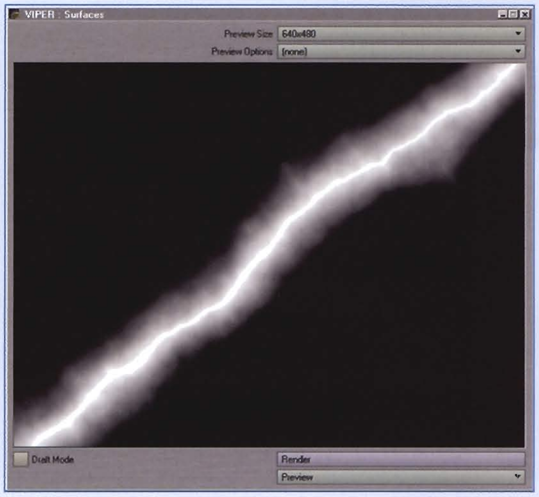
Black has RGB values of 0, 0, 0; and any time you add 0 to a number, the number remains unchanged. Since the area around the texture was black, it simply rendered as if it was 100 % transparent since it had no value to add to the colors behind it. The rest of the texture did have some color, and this was added to the backdrop colors.

You'll notice that the blues in the lightning bolt become brighter over the blue sky, but remain darker over the brown area. The blue of the lightning was being added to the blue in the sky, resulting in a brighter blue, while in the brown area, the main color being added was red, which was absent in the surface. This results in the surface looking like a normal transparency for that area, which is how a real spark or lightning bolt would act. Though a real lightning bolt would be much brighter than the stuff behind it, so the effect would be easy to distinguish, not to mention a bit on the dangerous side.

28. Clear the scene and load that Lightning Bolt object. Open the Surface Editor and activate VIPER. We will attempt to duplicate the multi-colored look of our Lightning Bolt by using a Gradiant texture.

29. Open the Texture Editor for the color channel, where we originally created the three Marble layers that generate a white-blue-purple glow effect on our bolt. Deactivate the first two layers, so only the dark purple one is active. We'll use this one because it's the widest vein, and gives us more of an area to work with.

30. Add a new Gradient layer, and add a key at the bottom of the bar, which now has a value of 1.0 instead of the 90 we're used to. This 1.0 equates to the areas of the layer below where the texture value is 100%. Note this does not mean the actual visible texture is 100%. It only means the maximum part of that texture. In this case, the brightest part of the marble texture we have is 100, 0, 150. This is the color we've given the maximum point of the Marble texture. What we're going to do now is basically strip this color definition from the texture and see it for what it really is. Change the color for the top key to black.



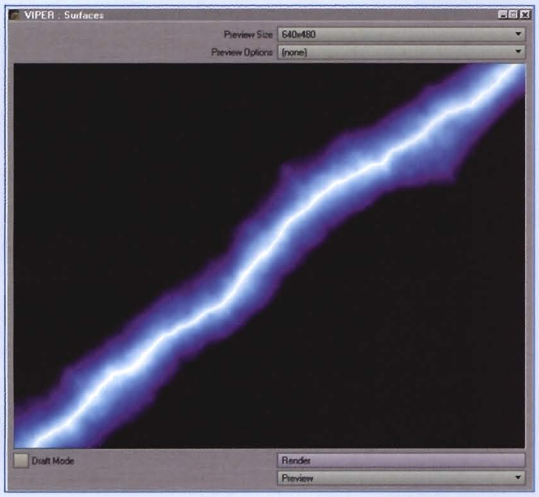
VIPER : Surfaces

Preview Size 640x480

Preview Options (none)

☐ Draft Mode

Figure 24. A Previous Layer gradient applied to the lightning bolt strips it of its color.



VIPER : Surfaces

Preview Size 640x480

Preview Options (none)

☐ Draft Mode

Figure 25. Adding two colored keys to the gradient remaps it so it's now very similar to the original.

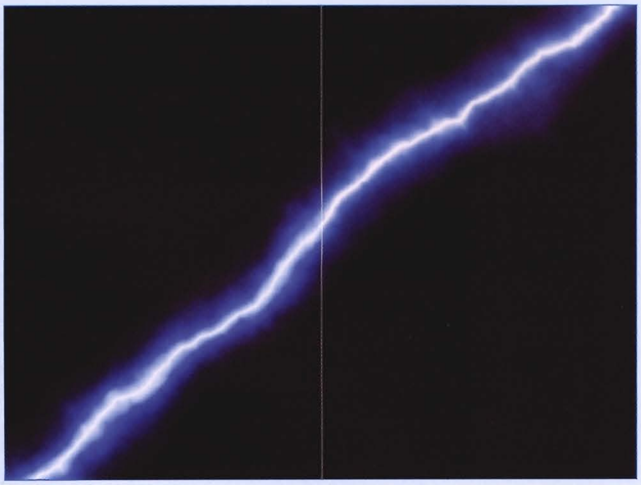


Figure 26. A split view of the original three vein bolt on the left, and the new gradient controlled bolt on the right. While they're virtually identical, the one on the right renders in less than half the time.

You will now have a white version of the marble vein, which used to be a dark purple. Figure 24. This is what the texture looks like internally, before the range of greys in it are converted to colors. And what we're about to do is change the way it's converted to colors.

31. We'll try to duplicate the original Lightning bolt, so set the color of the bottom key to 255, 240, 255, which is the same color we used for the thin, top layer of Marble. Now, add two more keys to the bar, relatively evenly spaced. Color these two new keys using the same colors as the two other Marble layers, so we have a gradient going from black at the top, to purple, blue, then white.

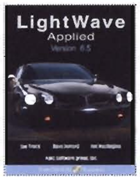
VIPER will now show you a new bolt that's quite close to the one we had before. Figure 25.

Now it's simply a matter of sliding those keys around until the image in VIPER matches the original render, or until you're satisfied.

Note: When a gradient like this is applied, the color or value of the layer it's referencing is unimportant, unless the gradient layer is less than 100% opaque.

Note: Since the original effect had three layers overlapping, some color blending occurred. Using the exact same colors on the gradient will get us close to the original effect, but not an exact match. The colors used on the Marble are what actually appears in the center of each vein. This color then blends with the layer below it as it expands away from the vein center. For example, the bottom purple layer used to add a slight amount of red to the blue layer above it, but this red isn't present in the color we gave the blue key. Adding a small amount of red will help get rid of that dark area that forms between the blue and purple keys. Also, you may want to darken the purple key since the original purple was blending with the black base.

A couple benefits exist to using a gradient. The first is control. You can quickly and easily change a color, and redefine the entire look with a few quick mouse clicks. The other benefit is speed. Procedurals take some time to calculate, and as we increase the number of procedurals, we also increase the amount of time it takes to generate them. Figure 26 shows the bolt done with three layers of marble, which took 128 seconds to render, and a similar bolt done with this gradient, which only took 59 seconds.



LightWave Applied
Version 6.5

Authors. Joe Tracy, Dave Jerrard, Jen Hachigian, and Epic Software Group
Release Date. August 1, 2001
Pages. Over 600 pages

LightWave 6.5 takes working with LightWave 3D to new heights through detailed step-by-step tutorials. Included with the book is a CD-ROM, which contains content from the book showcased in an easy to use interactive menu.

This article has additional online content.
www.newtekpro.com

SONIC FOUNDRY | ACID PRO 3.0 | BY BOB KETCHUM

Product.
Sonic Foundry
ACID PRO 3.0
Loop based music sequencer, ideal for the non-musician.

Minimum Requirements.
System: P3 @ 300 MHz
OS: Windows 2000/Me/98
RAM: 64 MB

Price.
US$499.95

Contact.
www.sonicfoundry.com
www.acidplanet.com

1617 Sherman Avenue
Madison, WI
USA 53704

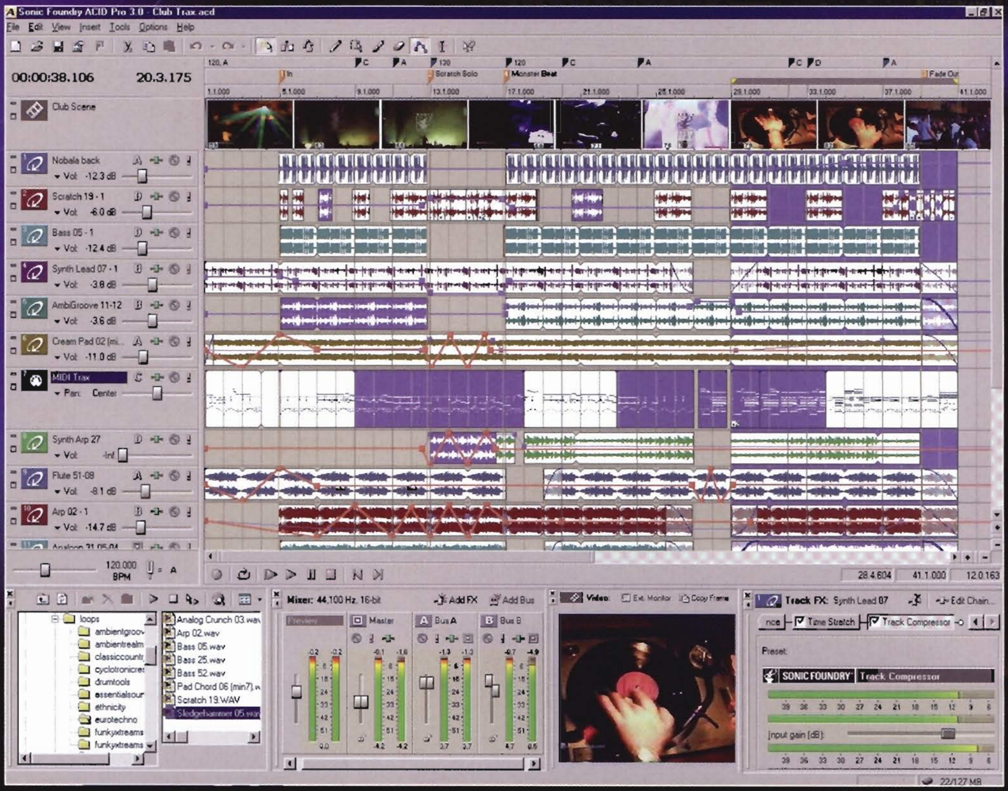
800.577.6642
608.204.7680

RATING >> 0-5

Features. 4.0
Ease of use. 4.0
Documentation. 4.0
Value. 3.5
Installation/Setup. 3.5
Technical Support. 4.5

Pros. An excellent production tool for creating everything from background tracks for video to standalone music compositions.

Cons. Slow to start. Possible problems with advanced sound hardware.


Sonic Foundry ACID Pro 3.0 - Club Trax.acd
File Edit View Insert Tools Options Help
00:00:38.106
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Club Scene
Nobala back
Scratch 19-1
Bass 05-1
Synth Lead 07-1
AmbiGroove 11-12
Cream Pad 02
MIDI Trax
Synth Arp 27
Flute 51-08
Arp 02-1
120.000 BPM
Mixer: 44,100 Hz, 16-bit
Video:
Track FX: Synth Lead 07
SONIC FOUNDRY Track Compressor

Have you over-used all the royalty-free music in your library? Is the music track your client provided too short, or too long for the video you've painstakingly edited? Would you prefer that a particular piece of music was a different pitch or tempo? Do you wish you had an easy way to add some spice to your video productions? Then look no further, ACID provides the solution to all of those problems and more... and it'll do it non-destructively and in realtime.

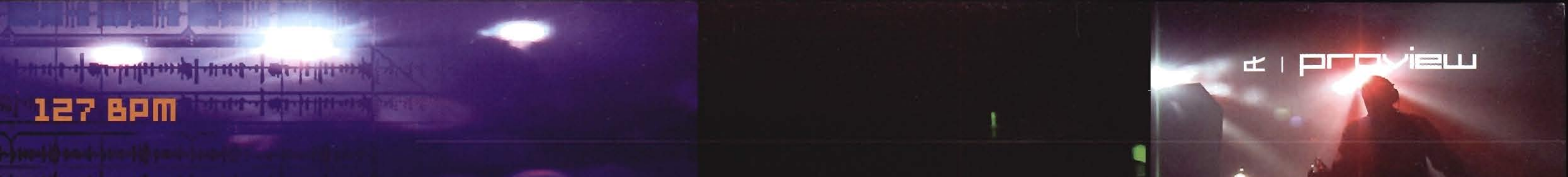
If you're often looking for backing music for your video productions, or for any other purpose, this application will single-handedly revolutionize the way you work. Unlike many other products, released with much ballyhoo and hype, ACID really does deliver the goods.

ACID is essentially a loop based music sequencer, which allows you to quickly build projects from snippets of sound. At first glance, ACID may look very basic; but as you dig deeper, you'll recognize what an incredibly powerful and time saving application this is.

I first started using ACID back at version 1.0; but a lot has changed since then. The latest version, 3.0, adds support for video synchronization, assignable audio effects, additional audio formats, and MIDI. But let's not get too far ahead of ourselves.

The Ins and Outs of ACID

Sound files, ACID's staple food, can be anything: songs, sustained chords, instrument recordings, percussion hits, animal sounds, grunts, groans, whatever you like. The program comes with a CD containing more than 600 ready-to-go music loops. If that's not enough, a quick web-search will locate musical instruments, sound effects, and samples galore – much of it for free. In addition, Sonic Foundry sells a huge assortment of ACID-ready loop libraries in categories such as: Ambient, Cinematic, Rock, Country, Jazz & Blues, Techno, and Dance. Although ACID has it's own proprietary file formats, it also supports the standards: WAV, AIF, MP3, etc.



These sounds are easily accessed from within ACID with a convenient file Explorer view, which resides at the bottom of the project window. Select any sound file and ACID will immediately audition it, while also revealing details such as tempo (if available), sample rate, mono/stereo, etc. If the sound suits the project you're building, simply double-click it and it'll be added into the Track view. Then, select the Draw Tool and drag your mouse across the track wherever you want the sound to be heard. If you drag out an area longer in time than the actual sound, ACID will automatically loop it. If you only want to use a portion of a sound file, the Chopper view allows you to cut and paste smaller pieces of a sound into the project. Figure 1. This is great for creating drum fills, stutters, and DJ-style effects.

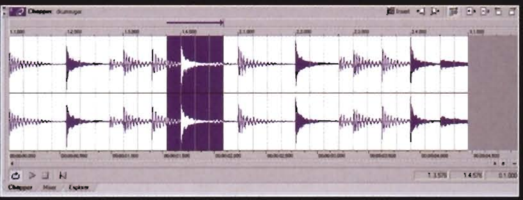


Figure 1.

Tracks run from left to right across the project window. Each sound is assigned to its own track, and can be moved back and forth in 32nd note increments. All views are dockable, and therefore can be hidden, resized or repositioned to suit your needs.

Probably the coolest feature is ACID's ability to auto-adjust sounds to fit the tempo of the project. You can also adjust the tempo of the entire project and ACID will automatically update all the clips within the project. Furthermore, if you want to play a melody with a sound, but only have that sound as a single note, you can simply clone it and change the pitch/key. ACID is a godsend to non-musician video editors, because you're not required to know much, if anything, about composing music. ACID does all the hard work for you.

Other quick and easy-to-use edit features include: Envelopes - which allow you to change amplitude (volume), pitch (key), and pan (stereo position) over time (Figure 2); the Erase Tool – to split sounds or to erase unneeded sections; and the Time Select Tool – to select all events within a range of time. Again, everything is done non-destructively, so you can always change your mind without worrying that it's too late.

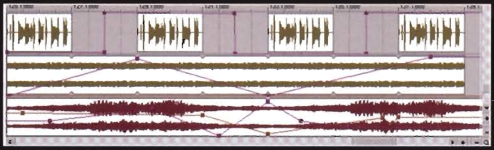
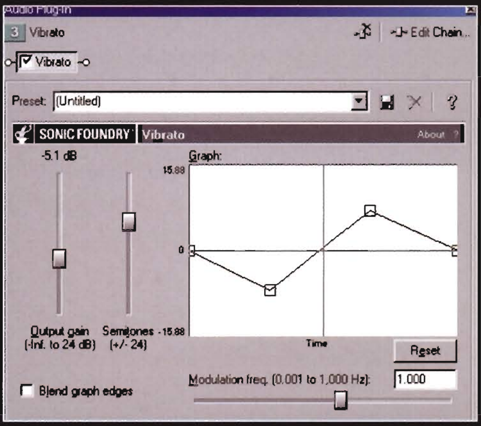


Figure 2.

The List Goes On...

ACID includes 18 realtime digital audio effects, including familiar effects such as: Chorus, Distortion, Delay, EQ, Pitch Shift, and Reverb; as well as more uncommon effects like: Gapper/Snipper, Multi-Band Dynamics, and Paragraphic EQ. Each includes a good selection of presets for common uses. Because they are implemented as standard DirectX plug-ins, you're not limited to the included effects. As well, any program with DirectX plug-in support can also access these Sonic Foundry effects. Figure 3.



☑ Vibrato

Preset: (Untitled)

-5.1 dB

Modulation freq. (0.001 to 1,000 Hz): 1.000

☐ Blend graph edges

Figure 3.

Other ACID features include: the Beatmapper remixing tool – to add tempo information to sounds, remix and combine music loops, add beats, and overlay samples. Video track allows you to add music to an AVI or MOV video clip. With the CD-Audio Extraction component, you can add songs from audio CDs into your project. And filling out the generous feature list are CD Burning and MIDI record and playback.

The flexibility of this program is truly amazing, and it is so user-friendly that most people will not need to consult the documentation to get started. You just drag and drop, and cut and paste your way to musical ecstasy!

Speaking of documentation... it's all online and there's plenty of it. One interesting inclusion is a Signal Flow Diagram, which makes it easy to understand how all the different functions of ACID work together. A large Glossary of terms and a section of Tips and Tricks are also very helpful.

Also included are feature-reduced versions of two other popular Sonic Foundry audio production applications. Vegas Audio LE allows you to record, edit and mix up to eight tracks of audio. Sound Forge XP Studio 5.0 is a digital audio editor and file format converter, which includes over 1,000 sound effects organized into categories such as: Aircraft, Applause, Doors and Drawers, Explosions, People, Science Fiction, and Transitional Elements.

Planet of the Acid People!

After you've installed ACID and played with all the cool toys and sounds, click on Get Media in the tool bar, which takes you to an exclusive area of the Sonic Foundry website. At this location, updated monthly, you can download free media. After that, click on the ACID News icon (or go to www.acidplanet.com) to find out what's going on in the world of ACID. You'll find tips to make the most of your ACID experience (these seem to be randomly chosen each time you visit), learn about contests in which you can win Sonic Foundry products, and best of all... find out about the latest 8Packs.

8Packs are free downloads that contain eight loops and an ACID project file – every one is different, and they're always a learning experience. And they change every week. That's right, and it's been going on for years. Sadly, you can't access old 8Packs, so be sure to add this adventure as a regular event in the scheduler of your palm computer. 8Packs are the perfect way to see how experienced users build their projects. All their secrets are revealed!

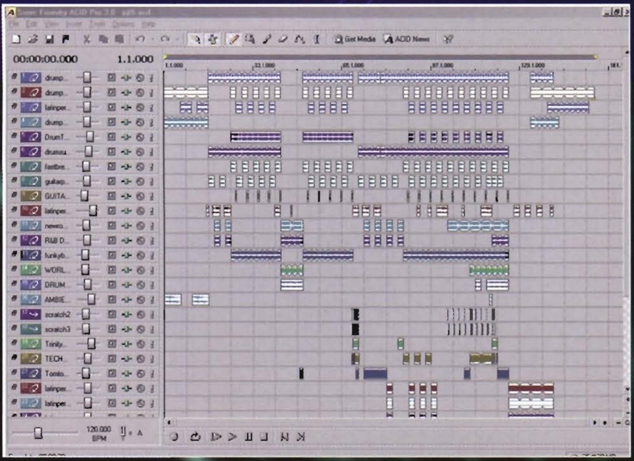


Figure 4.

ACID In Action

I create many of my own production music tracks for corporate/industrial or training video projects with just a few good ACID music loops. Lately, I have been using it to produce audio tracks for television commercials, too.

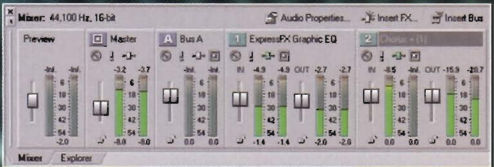
I start by recording my voice - I use Soundprobe for this, but the audio tools included with ACID should do the job nicely. Then, I'll add a bit of slap echo or small room reverb to the track. I may even use a little compression so it stands out in the mix. When it's just the way I want it, I save it out as a WAV file.

Then in ACID, I select loops to fit the mood of the project (usually drums, a bass, guitar, keyboards or a synth pad) and add in my voice track. Next, I add volume envelopes that follow along with the narrative. And finally, I save the results out to a WAV file, and drop that into an audio track on my non-linear editor.
It's a done deal in a few minutes! And I don't worry about copyright/royalty issues since I created it all by myself.

Trippy Technical Support

These days it seems like technical support consists largely of FAQ's, and an endless labyrinth of automated telephone sub menus. Not so with Sonic Foundry. This company, founded in 1991, seems to be largely made up of young musicians with advanced technical savvy. Somehow they've managed not to lose sight of what makes for a good relationship between a manufacturer/developer and its product users.

I know these things, because my installation of ACID didn't go as smoothly as one might hope. The first thing I had to do was hunt down and install DirectX 8.0a. No problem - Sonic Foundry had the appropriate links to the Microsoft download areas right on the page where I downloaded ACID. Next up was to install ACID, and its various bonus tools. Somehow the registration process got confused though, and when I restarted the programs I had to go through the registration process all over again. I also couldn't get ACID to recognize sound files. Things weren't going so well so I e-mailed technical support. Within a few minutes, literally, I received an e-mail back suggesting a solution. I followed the instructions and it worked perfectly!



The Mixer gives you level control of Busses and Assignable FX.

Well... almost. Everything looked good-to-go, but when I tried to play a project I'd created in ACID 1.0, the sound kept stuttering. Again, it didn't take long before I had the answer. A simple adjustment of the Playback buffering from the default 0.25, to 1.0 seconds, and I was on my way. All has been great in the world since.

Admittedly, I was testing this out on an old machine, a P2 @ 333 MHz, under Windows 98. The same installation on a P3 @ 800 MHz, under Windows 2000, was quick and totally painless. Sonic Foundry's minimum requirements are very reasonable. Of course, faster computers will be able to take advantage of more effects, a larger number of tracks, etc.

The only hardware problem we encountered was with an M-Audio Delta 1010 professional sound card. This audio device has multiple inputs and outputs; and under Windows 2000, it requires applications to support WDM drivers to make use of advanced features. Although ACID appears to support

TIPS

Use the Erase tool to create entirely new loops from longer ones. Or take a kick drum from one project and a snare drum from another, for example, and make an entirely new drum loop. Remember that you can record that loop, saving it out as a single sound file, to make it easily accessible later. In 3.0, use the Chopper functions for even more flexibility.

When you perform a cut and paste operation, you will notice that after pasting, the cursor will advance to the end of that paste operation. This is useful when you want to create a long loop – allowing you to just copy, then paste, paste, paste...

Double-clicking in the lower-right corner of the Track view will zoom the project out all the way. Figure 4. This is a time saver. In 3.0, you can also drag the timeline and precisely adjust it to just the right view.

If you shift-select multiple tracks, adjustments to any single track's faders, mutes, solos, or output selections, will be applied to all the selected tracks.

When you copy a clip which contains Envelope data and then paste it into a blank space in the track timeline, the new clip will inherit the copied clip's envelopes.

When using a lot of loops it's easy to make the mix too busy. Use the Erase tool to selectively remove portions of the loops. This will give more character and personality to the project.

If you're building a drum track, try shifting the high-hat track just a little before, or after, the correct sync mark. This will add a human feel.

By entering false information about the length of a loop, you can speed it up or slow it down relative to the tempo of the project. For example, to make a track play twice as fast, go to the Track Properties > Stretch panel and change the Number of beats to half the value. Double the Number of beats to make the track play half as fast.

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...you need to take a closer look.

Monitor- Jacky Daniel   Apple- Jim Hibbert   Loading Dock- Harry Porudominsky   Sunglasses- Jason Stemple advanced audio hardware functions, attempts to enable these capabilities were unsuccessful.

ACID had no problems accessing a basic sound card, ESS Maestro 1, in its default sound hardware configuration.

A Version For Every Budget

ACID PRO 3.0 has so many possible applications in a video production environment, or as a music composition tool, that it's worth the price of admission. But for some, the price might be too high.

Now that 3.0 has been released, the still very powerful predecessor, ACID Music 2.0, has been reduced to $99.95, which makes your initial plunge into a professional version of ACID an easy option. See the sidebar ACID Music 2.0 vs. PRO 3.0 for a comparison of features.

If you're more likely to need a particular style of music, $49.95 will buy you special 2.0... DJ, Hip-Hop, Latin, Rock, or Techno versions.

And if that's still out of your budget, don't worry - Sonic Foundry has you covered with a free version, ACID XPress. As you would expect, it has limitations such as only 8 tracks, and no plug-in Effects; but this version is still very usable.

You Can't O.D. on this ACID! Many audio tools have come and gone, and spawned a swarm of wanna-be's in their wake. ACID, however, has held its own as a seemingly competitionless audio production tool. For me, the decision to use any kind of product in my production studio, comes down to three criteria: The product has to be easy to use, quick to learn, and has to work consistently and stably. Without a doubt, ACID hits the mark.

Even though I am a musician, with many years of music composition experience, I can honestly tell you that you do not need any kind of musical training to operate this program. It's so user-friendly that if you've used any computer software at all, you'll intuitively grasp how this gizmo works. I mean, how difficult is it to drag and drop files into the project window and then stretch out the loop until it plays as long as you desire? Adding tracks is equally simple. And in a very short period of time, you can create a complete musical composition.

Before ACID came along, I spent way too much of my time composing and recording background music in a professional studio environment. In the time it would take to just get all the music gear set up to record a single music track, I could create a dozen completely different and unique musical pieces with ACID. I kid you not.

Did I mention that you don't even have to know how to play a musical instrument? Or keep one in tune? Nor do you have to know how to properly mic and record an instrument?

ACID is a must for anyone who needs to create background music for video, radio or television commercials; or to just noodle around creating cool and modern sounding music. It actually turns work into fun.

A quality product, great technical support, freely available and regularly updated exclusive downloads, fun, frolic, and all at prices to fit any budget. What more could you ask for? Hey! If it's got a good beat, and you can dance to it... I say, buy it! ntp

FEATURES	ACID PRO 2.0	ACID PRO 3.0
Royalty-free music creation	x	x
Music Loops CD	x	x
Number of tracks	Unlimited	Unlimited
Maximum Bit depth	8, 16, 24	8, 16, 24
Maximum Sample Rate	96khz	192khz
CD Burning	x	x
Unlimited Undo/Redo	x	x
Effects	XFX1 (6 DirectX Audio Plug-Ins)	XFX1, 2 & 3 (18 Direct X Audio Plug-Ins)
Volume, Pan and Effect Envelopes	x	x
Multiple Sound Card I/O	x	x
MTC Sync, Generate MIDI Clock	x	x
Export each track as single file	x	x
Beatmapper™ remixing tool		x
Chopper™ editing tool		x
Video Scoring Track		x
MIDI Record and Playback		x
MIDI File Support		x
DLS Sound File Support		x
MP3 import		x
Maximum number of effects per track	8 per project	32 per track
Effect chains / effect busses		x
CD Ripping / CD Extraction		x
Master, track and assignable audio effects		x
Attack, Sustain, and Release (ASR) envelopes		x
Track envelopes lock to events		x
"Get Media" Option		x
ACID News		x
Sound Forge® XP Version	Sound Forge XP 4.5	Sound Forge XP Studio 5.0
Vegas® Audio LE Multitrack Editing software		x
Save Formats	WAV, WMA, MP3, AIF, and RM	WAV, WMA, MP3, AIF, RM, PCA
Open Formats	WAV, AIF	WAV, MP3, AIF, RM, PCA, OGG, MOV, AVI

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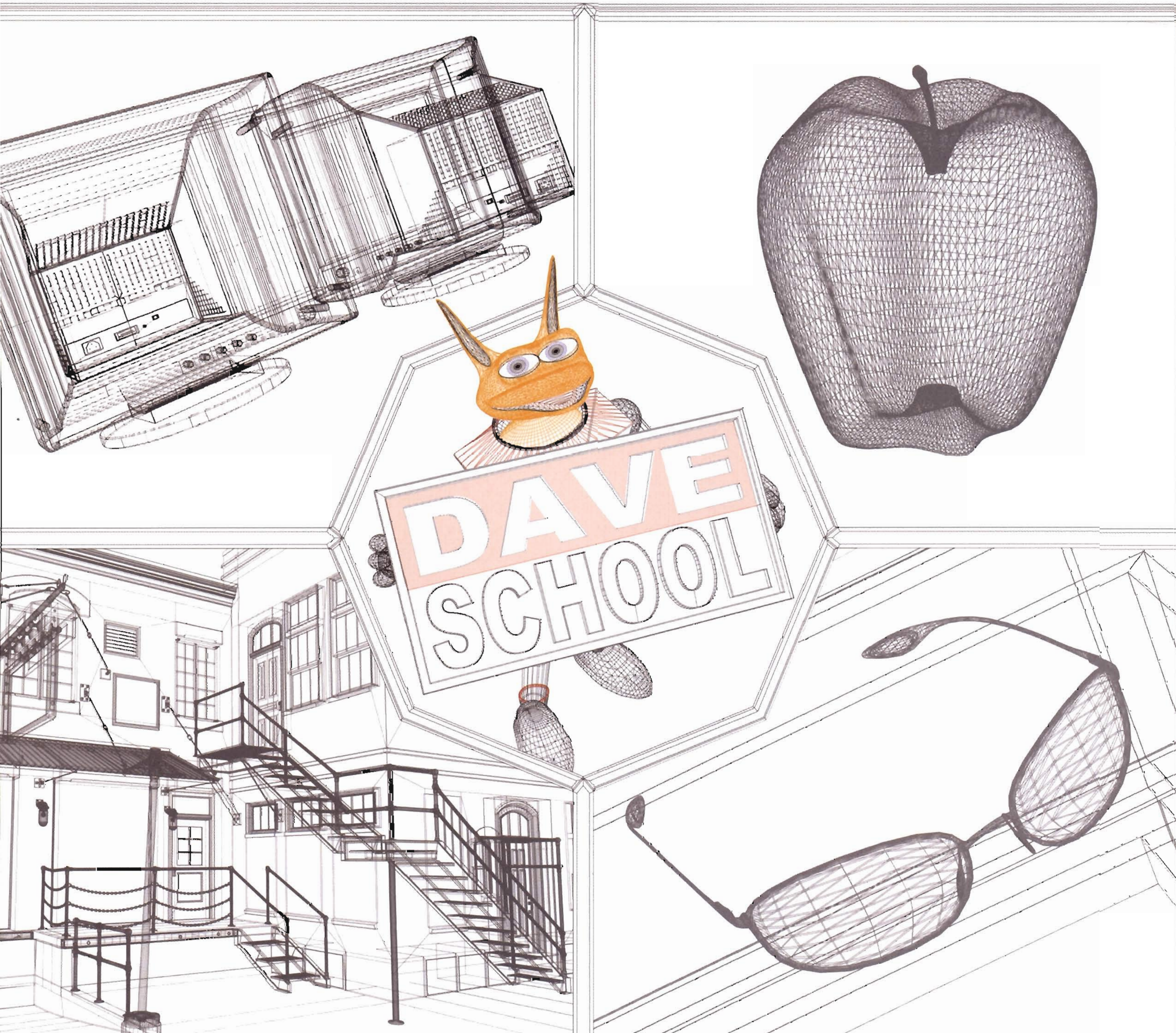

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STAN CARVER

VIDEO TOASTER AND PREMIERE 6 .

Tasa Delivers Realtime

Normally, in my column, I will share with you all the latest tips and tricks I can conjure for the Video Toaster [2]. Since version 2 is not shipping yet, I wanted to take this time before its imminent release to introduce you to one of the greatest phenomenon occurring for the Video Toaster independently from NewTek.

Since NewTek has opened up development for the Toaster to the public, inevitably, enterprising individuals will develop cool hardware and software that will add tantalizing features and functionality to the Toaster. Bob Tasa stands at the head of the line of Toaster innovators. Anyone who reads the Toaster mailing lists knows that Tasa has been burning the midnight oil creating plug-ins that extend the reach of the Toaster.

After VT [1] was released, Tasa was surprised that the Video Toaster did not support or was supported by many of the popular tools he normally used. So he began programming what he needed to bridge the compatibility gap. With the release of his RTV plug-in for After Effects, Tasa gained overnight popularity with many Toaster users. Soon after, Tasa began receiving numerous requests petitioning him to make Adobe Premiere support the Toaster.

Premiere Goes Realtime

I have used Premiere since its early days on the Macintosh. Over the years, I have experienced the pleasure and pain inflicted by the broad spectrum of video capture cards that have supported Premiere, many of which are no longer made. To be frank, hardware manufacturers' support of Premiere has been inconsistent, which has attributed to some of Premiere's less-than-pro reputation.

Toward the end of 2000, Tasa released a set of plug-ins to make Premiere 5 work with the Toaster. The only drawback was that you had to render every edit you made. Recently, Tasa announced a new set of plug-ins for Premiere 6 that promises realtime capabilities like never before seen. Early in the product development, he made me a beta tester of his new plug-ins. I am impressed with how Tasa's program has enhanced many of Premiere's features.

Integration

Tasa has managed to incorporate the Toaster into Premiere's environment. Now you can capture, edit, playback and export Video Toaster RTV files in realtime all from within Premiere. He has even designed his software to utilize all of Premiere's standard user interfaces. Most companies wedge their own nonstandard interfaces into Premiere.

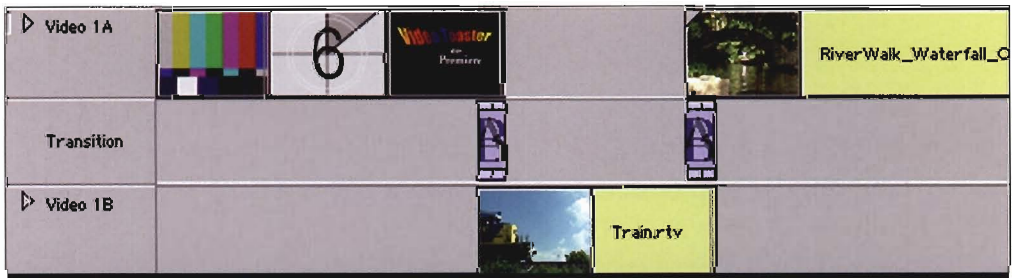


Figure 1

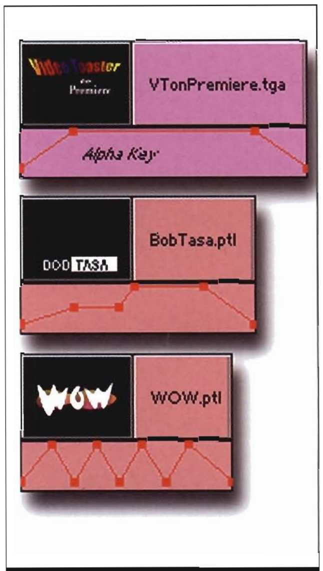


Figure 2

Multiple Layer Playback

Theoretically, Premiere can handle up to 99 tracks of video and titles. Now before you get too excited, no computer available today can manage all 99 layers. With Tasa's plug-in and a dual Pentium III, you can run three layers in realtime. **Figure 1.** With a Pentium 4, five realtime layers are possible. You can place any graphic with an alpha channel on the timeline and fade it in or out over time without having to render. **Figure 2.** Even with all these layers active, you can scrub the timeline without any hesitation – very responsive!

Realtime Cross Fades and Gradients

Everyone is breathlessly anticipating the multitude of otherworldly 3D transitions packaged with Toaster [2]. But let's be honest, we will probably employ more cuts and fades than we will falling sheep. Thanks to Tasa's realtime engine, we won't have to wait for these routine transitions to render

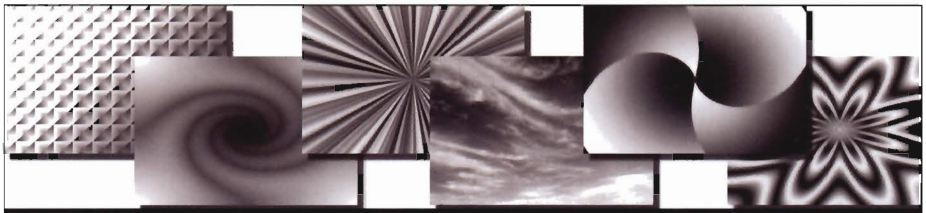
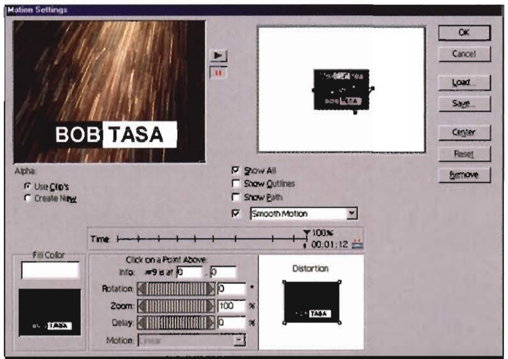


Figure 3

in Premiere. You can even jazz up your cross fades with neat patterns like smoke and clouds. Pixelan SpiceRack has produced a huge collection of these graduated backgrounds that make great transitions in Premiere. **Figure 3**

Realtime 2D DVE

Premiere's motion keyer allows you to create moving titles and DVE's very easily. If you are familiar with keyframes then this feature will be a breeze. Simply position the video or title where you want it to start and end, and Premiere will compute all the frames in between. **Figure 4**



Alpha: ● Use Clip's ○ Create New

☑ Show All
☐ Show Outlines
☐ Show Path
☑ Smooth Motion

Time: 100% 00:01:12

Info: #9 is at 0 , 0
Rotation: 0 °
Zoom: 100 %
Delay: 0 %
Motion: Linear

Figure 4

At the time of this writing Bob had horizontal and vertical movement working in realtime. In a later version, he hopes to take advantage of the motion keyer's scaling and perspective features. Other capture cards require an expensive add on card to automate Premiere's motion keyer in realtime.

Frame Sequence Playback

With Tasa's program, you can now play frame sequences to the Toaster without having to convert the frames to a video file first - a feature many animators will love. Simply right-click in the bin and import the folder that contains all the rendered frames. Make sure you have your still image preferences set to 1 frame or the images will not play back at the correct frame rate. Now drag the folder to the timeline and press play. **Figure 5**

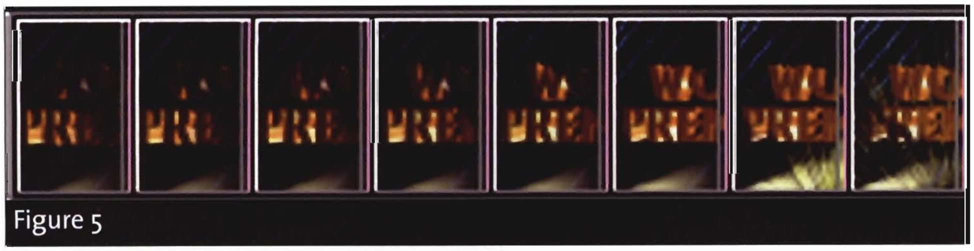


Figure 5

Storyboard Editing . . . sort of

While this article is about Tasa's contribution to the Toaster community, two Premiere 6 features should be mentioned. Many Flyer users remain loyal to their aging Amigas because of the Flyer's storyboard editor. Adobe has made an attempt at a semi-usable storyboard editor. Don't get your hopes too high. Premiere's storyboard editor is the "Diet Coke" of the one fashioned for Toaster [2].

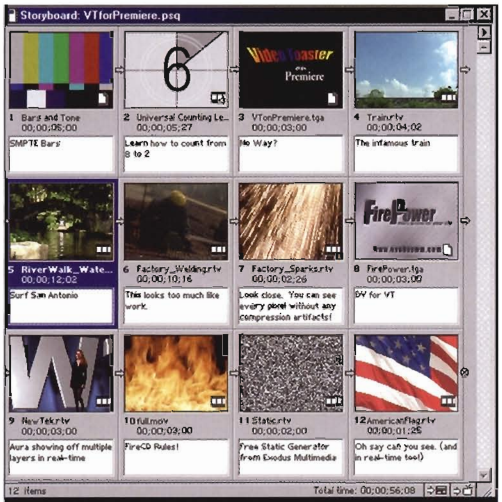
To implement the editor, you drag your clips from the bin into the storyboard window and arrange the clips in the order you want them to appear. **Figure 6.** Double-clicking a clip opens the clip editor window, where you can adjust the in and out points. Once all of your clips are arranged, you can have Premiere place all of your clips on the timeline by clicking the Automate to Timeline. From this point, you perform all the real editing from the Timeline.

DV

Premiere fully supports DV. Using an OHCI-1394 card, a FireWire card, you can integrate DV into your editing system. Premiere allows you to edit DV from the timeline and play it back out to the DV device, not the Toaster. You only need to render transitions and effects. Just think of all the money you saved by not having to purchase a "realtime" DV card and another system.

One Man

Tasa reports that he is developing realtime color correction and realtime speed control, and these features will be a part of the final release.



1 Bars and Tone 00;00;05;00
SMPTE Bars

2 Universal Counting Le... 00;00;05;27
Learn how to count from 8 to 2

3 VTonPremiere.tga 00;00;03;00
No Way?

4 Train.rtv 00;00;04;02
The infamous train

5 RiverWalk_Wate... 00;00;12;02
Surf San Antonio

6 Factory_Welding.rtv 00;00;10;16
This looks too much like work.

7 Factory_Sparks.rtv 00;00;02;26
Look close. You can see every pixel without any compression artifacts!

8 FirePower.tga 00;00;03;00
DV for VT

9 NewTek.rtv 00;00;03;00
Aura showing off multiple layers in real-time

10 full.mov 00;00;03;00
FireCD Rules!

11 Static.rtv 00;00;02;00
Free Static Generator from Exodus Multimedia

12 AmericanFlag.rtv 00;00;01;25
Oh say can you see. (and in real-time too!)

12 items Total time: 00;00;56;08

Figure 6

I thank Bob Tasa for his efforts. I am enjoying editing with Premiere again. The responsiveness and integration with my Video Toaster is bar-none the best hardware support I have ever seen for Premiere. The irony is that one man did what many corporations have tried to do in the past – make Premiere work. Tasa's plug-ins set a new standard for the industry.

For more information about Bob Tasa's plug-ins, go to www.toastergarage.com.

TUNING UP YOUR AMIGA

By Blaine Holm

For most loyal Amiga Toaster/Flyer fans, the release of Video Toaster [2] should signal the end of the glorious reign your Amiga enjoyed as the centerpiece of your studio. That statement is a tough thing to say, especially for me, but the Toaster we always dreamed about is almost here. I can smell the shrink-wrap burning.

I'm not suggesting you trash your old friend. Perhaps, you could patch your Flyer into one of the inputs on the new SX-8. Indeed, if you're not ready to put the old stallion out to pasture, then let me offer some maintenance tips that will assure that your Amiga will continue to give you many more years of service. I will concentrate on the A4000 series, but many of these issues apply to all Amiga systems.

Before beginning, make sure you take the proper safety steps. The A4000 desktop and Tower have some very sharp edges. Be careful. Never work on the system with the power on, or with the power cable attached. Just moving the A4000 desktop case can turn the system on. Follow all standard ESD precautions including the use of a wrist strap.

Check the Battery

One of the most common causes of Amiga 4000 failure can be attributed to the corrosive action of the NICAD battery on the motherboard. This battery is located near the memory sockets near the left front of the system. It is usually a red barrel type battery, and was only designed to last 5 years. **Figure 1.** If the battery begins to leak, it eventually will ruin your motherboard beyond repair. You can tell if your battery is leaking by looking for a white "fuzz" around its metal edges.

The battery performs no useful function other than keeping the time and date. So, if they are not important, you could remove the battery by carefully rocking it back and forth until you break the tabs. Wear rubber gloves and make sure you are grounded with a static strap. If you are handy with a soldering iron, you can replace the battery (about $15). The A4000T has a Lithium battery and is not as prone to leaking, but you should still check it periodically.

Check the Cooling

Power supply fans usually go out with a bang, and then a whimper. Sometimes, the power supply fan will start to make loud noises, especially when first turned on for the day. To check the fan, feel for air coming out of the back of the system.

In the A4000 Tower, buy an AT compatible Power Supply (not ATX) with at least a 250W rating. If you own an A4000 desktop, then you'll have to replace the fan. Any 3 1/8 inch 12Volt fan used in PC power supplies will work fine, just make sure you install it so the air blows out. Be very careful inside the power supply, and test all metal surfaces for residual voltages before handling. **Figure 2.** If you have a Flyer, and you house your hard drives in a separate case, you also should inspect that cooling periodically.

How old is that hard drive?

Your hard drives will eventually wear out. If you need to replace a system drive, I would suggest that you upgrade to Amiga OS 3.9 since it adds support for larger drives. Make sure you change the MAX transfer value, which is done in the ADVANCED panel of HD-Tools. Click on Change, and choose the MAX Transfer field. Enter "0x1fe00", press return, and save the changes.

If you have further questions about these procedures, the VTFML (www.yahoogroups.com/community/VTFML) is a great resource full of helpful folks. Of course, if you'd rather have someone else repair your system, give your local dealer a call.

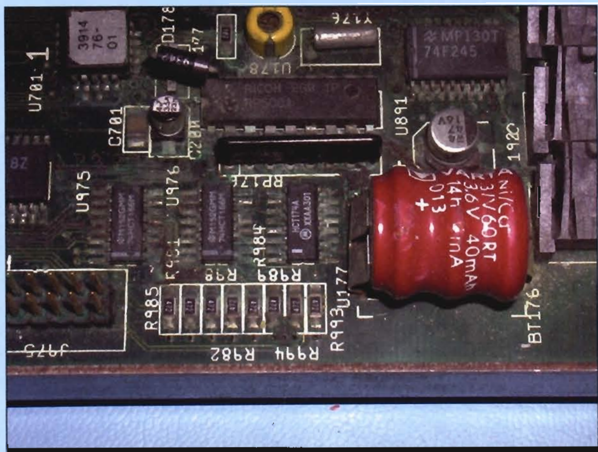
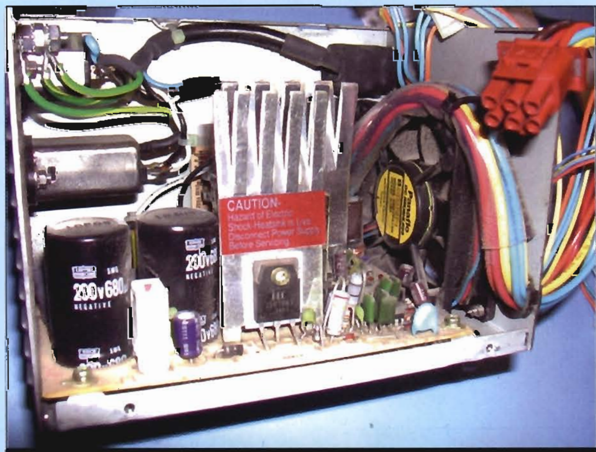


Figure 1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Hazard of Electric Shock Hazards in Live. Disconnect Power Supply Before Servicing.
200v680

Figure 2

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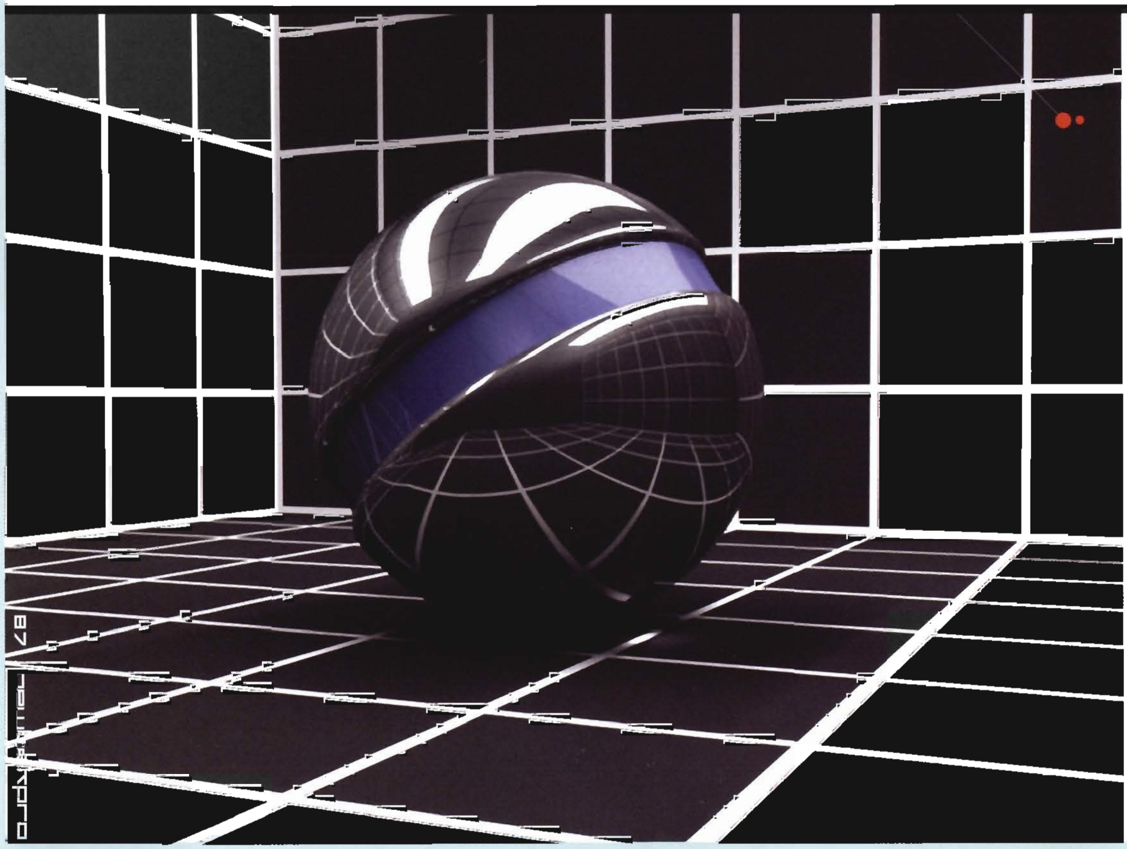
Simply put, radiosity is light bouncing off of one object onto another. In the real world, radiosity is calculated in realtime. In the 3D world, radiosity was computed in molasses time - until now. About a year ago, NewTek included radiosity as part of the new features of LightWave [6] and radiosity renders started showing up everywhere. But the hype quickly died off. While the final product looked nice, you couldn't animate with it because of extremely long render times. We all know that animation isn't something we want our animation package to do anyway, right?

RADIOSITY

BY JORDAN WOLLMAN



With LightWave [6.5] came a new feature, Bake, that greatly sped up the process of creating the look of radiosity. Bake renders your lighting, shadows and all your surface settings, and then wraps the radiosity image onto your objects. Baking is nice because you only have to render with radiosity turned on once, but Bake is extremely limiting. Its downfall, you can't animate any moving parts in the scene. Oh well, one step closer.

ANIMATE WITH RADIOSITY!!!!! With NewTek's release of LightWave 6.5b, it's actually possible to animate with radiosity turned on and it won't take six days a frame. Their programmers sped up the radiosity engine and added some really neat features that take care of a few of the previous problems. (So, if you haven't downloaded 6.5b, go to www.newtek.com right now - it's free to owners of LW [6]. Go on, I'll wait.)

DIFFERENT SCENE TYPES.

LightWave 6.5b offers three different methods of doing radiosity.

The SkyDome

We all have been bombarded over the last year with renders of cute little characters and buildings and trucks and everything else modeled inside what is called a SkyDome. A SkyDome is a luminescent sphere with a flat polygon as a floor. These renders were intended to show how good and smooth radiosity looked. Somehow or another, it ended up turning into a fad. People... You will never get paid to do a SkyDome render!!!!

The SkyDome rendering style is great for showing off models. Figure 1. The downfall of this style is that you have to render with no error tolerance for it to look good. That means really, really long render times plus you don't have specular highlights because you are using an object to light the scene.

In general SkyDome renders take too long for you to waste your time on them.

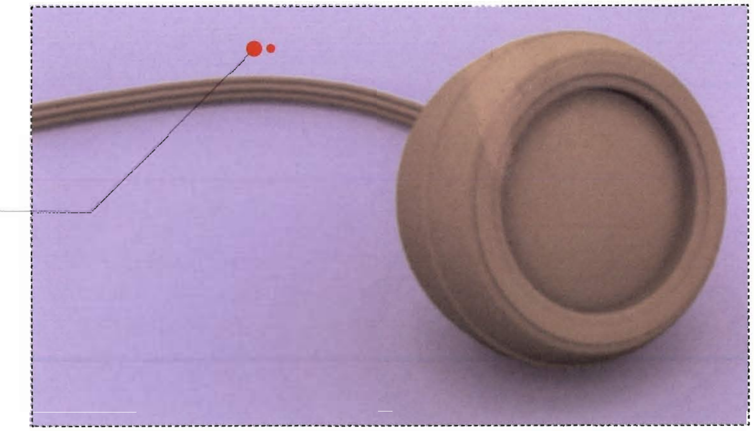


Figure 1.

Real World Renders

The most common application for radiosity is inside a room or anywhere you have a lot of objects close to each other. Otherwise you are wasting a lot of render time for an effect you could have easily faked with traditional lights.

Radiosity takes into account all of your surface attributes (i.e. Diffusion, Specularity, Reflectivity, etc.) You can use this to your advantage. To an extent, you can control how much light your object bounces by setting your specularity higher.

The Radiosity button isn't going to light your scene for you and make your surfaces look great automatically. The best use for radiosity that I can think of is to add a touch of realism to a render that already looks good. Figure 2.

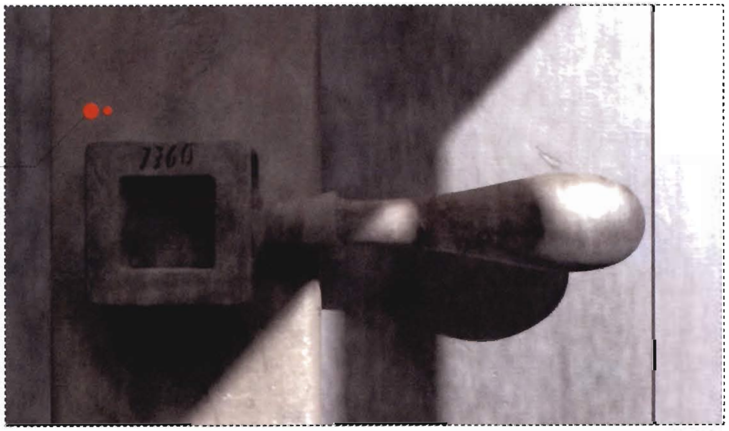


Figure 2.

HDRI Renders

High Dynamic Range Images, or HDRI's, are just images with more color and brightness information than normal 24bit images have.

You can map an HDRI to a SkyDome and use it to illuminate your objects. This render style can achieve stunning photo-realistic images with almost no setup. Figure 3.

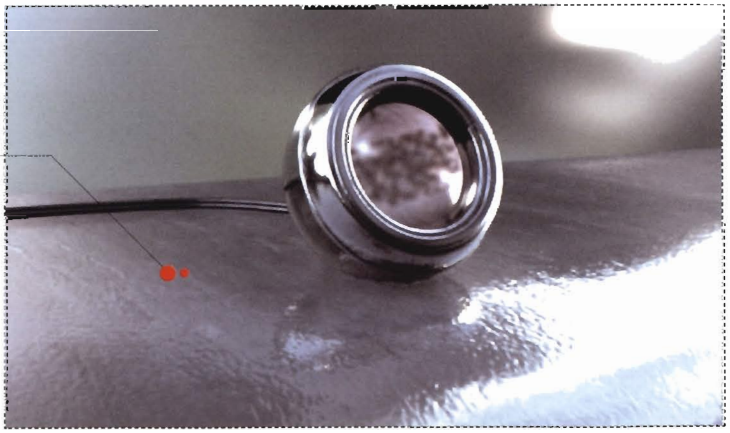
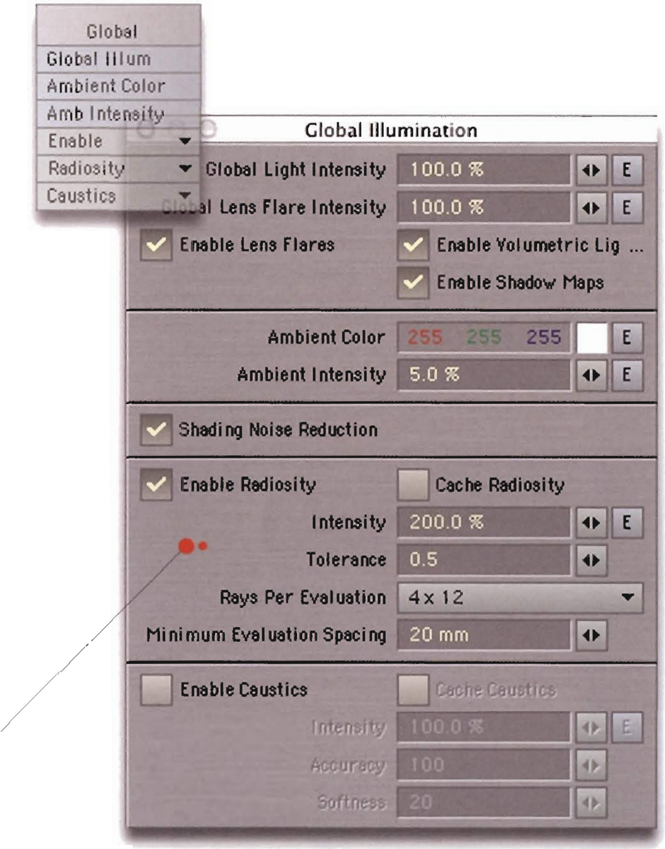


Figure 3.

RADIOSITY



Global Illumination

- Global Light Intensity: 100.0 %
- Global Lens Flare Intensity: 100.0 %
- ☑ Enable Lens Flares
- ☑ Enable Volumetric Lig ...
- ☑ Enable Shadow Maps
- Ambient Color: 255 255 255
- Ambient Intensity: 5.0 %
- ☑ Shading Noise Reduction
- ☑ Enable Radiosity
- ☐ Cache Radiosity
- Intensity: 200.0 %
- Tolerance: 0.5
- Rays Per Evaluation: 4 x 12
- Minimum Evaluation Spacing: 20 mm
- ☐ Enable Caustics
- ☐ Cache Caustics
- Intensity: 100.0 %
- Accuracy: 100
- Softness: 20

Figure 4.

Radiosity Set-Up

The radiosity settings are in the Lights/Global Illum panel. To turn on radiosity, simply click the Enable Radiosity button. Figure 4. If this is too simple for you, I suggest spending thousands more for a complicated 3D package. Enabling radiosity will cause all direct or indirect (bounced) lights to be calculated in the render.

Tolerance

For this example I used a tolerance level of 0.5. A tolerance level higher than 0 tells LightWave to interpolate the radiosity between Radiosity Pixels instead of taking the time to calculate every single pixel.

Setting your tolerance level higher than 0 will give you a blotchy noisy render. To counteract the blotchy effect, I turned on Shading Noise Reduction, which reduces the noise of Area or Linear lights and generally smooths out that blotchy effect.

*** WARNING *** THE NEXT TWO PARAGRAPHS ARE STRICTLY ON A NEED-TO-KNOW BASIS.

Rays Per Evaluation

For this example, I used 4 x 12 Rays Per Evaluation.

Rays Per Evaluation tells LightWave how many Radiosity Rays each pixel is giving off. Think of each pixel as a sphere in Modeler. You have to tell Modeler how many sides and segments to give your sphere. By the same token, radiosity pixels are 3D and they give off light in multiple directions. The more n by n rays (4 x 12) you set, the more rays are spread by your pixels. Keep in mind that the more rays you have, the more time it will take to render.

Minimum Evaluation Spacing

I used a Minimum Evaluation Spacing level of 20mm.

Anywhere polygons are close to each other, like corners, radiosity pixels will start to clump. If the clustering were allowed to remain, your surfaces would have intense banding in the diffusion. To keep this from occurring, LightWave automatically forces the radiosity pixels to spread evenly across the surface. You can control the number of radiosity pixels computed by adjusting how closely they are spaced. Figures 5 and 6.

Minimum Evaluation Spacing tells LightWave that it cannot put two radiosity pixels closer than the specified value. The smaller the distance, the more radiosity pixels there are and the more accurately the lighting is rendered. Perhaps these formulas will make this concept easier to understand.

On a 1 meter polygon, with a minimum evaluation spacing of 5 cm, 20 radiosity pixels will be computed.
On a 1 meter polygon, with a minimum evaluation spacing of 10 cm, 10 radiosity pixels will be computed.
On a 1 meter polygon, with a minimum evaluation spacing of 20 cm, 5 radiosity pixels will be computed.

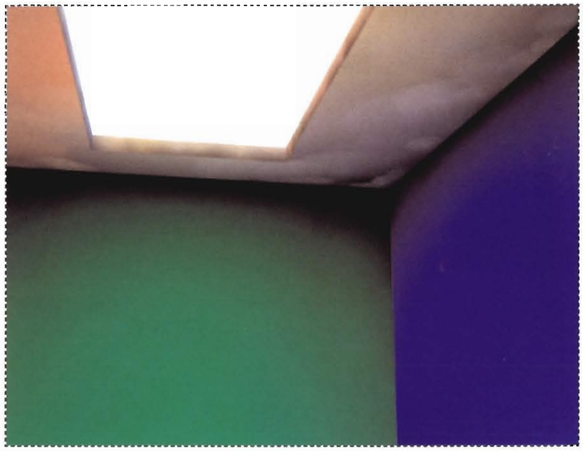


Figure 5. 100 mm Minimum Evaluation Spacing

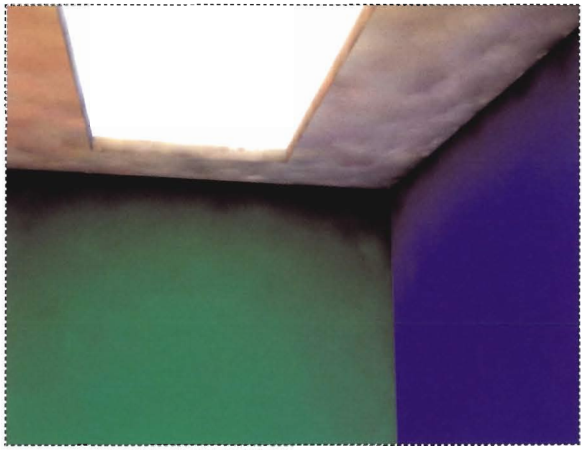


Figure 6. 1 mm Minimum Evaluation Spacing

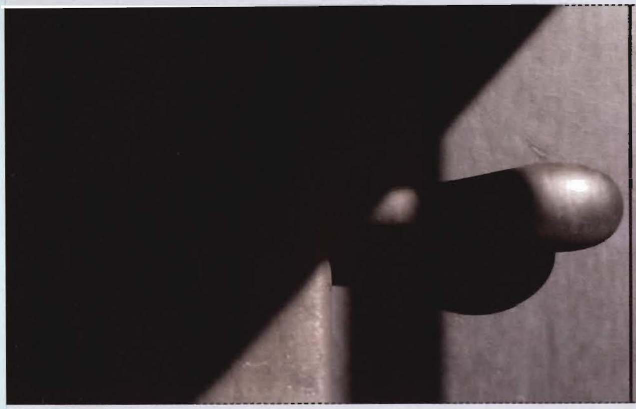


Figure 7.

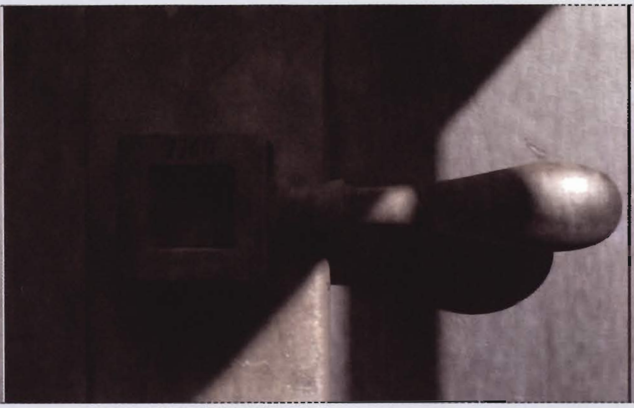


Figure 8.

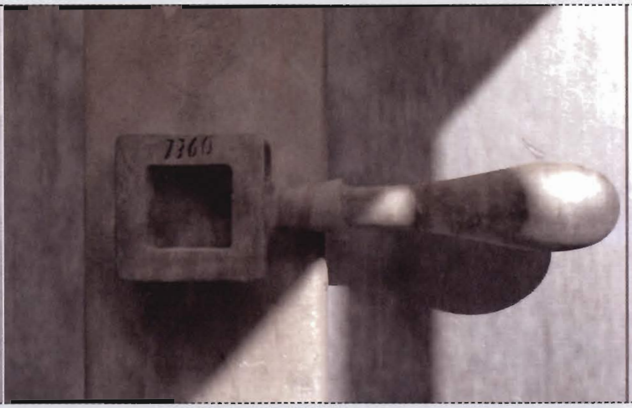


Figure 9.

Intensity

You can tell LightWave's lights to be more than 100% strong, which can be really helpful in most radiosity renders. In this scene I used a light at 200%, which in turn illuminated the whole scene 2 times stronger.

You can set the radiosity intensity level beyond 100%, making the radiosity stronger. I tried this scene at 0%, 100%, and finally 200%, which turned out quite nicely. Figures 7, 8, and 9. This setting makes the Radiosity Rays go farther and shine brighter - but that's just the technical definition.

Don't go wild

You can spice up almost any scene by turning on radiosity. But don't think of it as the magic "Make Incredible Render" button. You still need things like good modeling and good surfacing to push your renders over the top.

Finally, with the speed improvements of the LightWave 6.5b radiosity engine, you can render a whole animation with radiosity turned on. You will have to play around with the settings until you get the result you want. I have never rendered two scenes with the same radiosity settings.

And remember, no matter how good you are in LightWave, your rendered image does not need to be the final step. You are no less an animator if you retouch your LW render in Aura or Photoshop.

DISCLAIMER. maybe I should have mentioned this at the beginning, but understanding how radiosity works will mess with your mind. The writer or *newtekpro* cannot be held accountable for any mental breakdowns you may have experienced while reading this article. Thank you.

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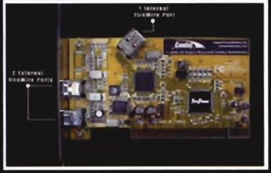

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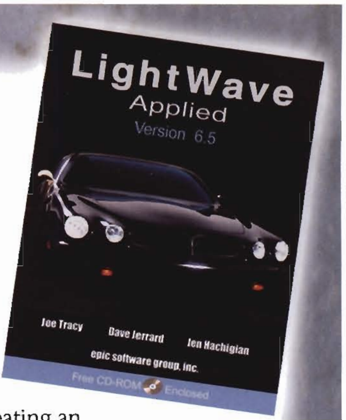

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MOJO

SINK OR SWIM .

Sometimes no choice is the only choice

Last week I undertook the most difficult task of my entire nine years in Hollywood – I cleaned out my desk at Foundation Imaging. Not because the company was moving. Not because of a better offer elsewhere. And not because I simply decided it was time to move on. In fact, this decision wasn't even mine. I was fired.

Yup, you heard right. I, Mojo, Employee #1, who worked from the first episode of *Babylon 5* to the last episode of *Voyager*, was handed his pink slip mere days ago. And, no, I was not laid off – I was fired.

I will ruminate on the aspects of the axing in my next column. At this time, I find myself concentrating on a far more relevant issue: what now? Ending your daily routine after nearly a decade is a very daunting reality to face.

My first step was to follow the advice of a very insightful man, (may he rest in peace): "DON'T PANIC." My life was in no immediate danger – all I did was lose my job. On the other hand, it seems rather glib of me to just dismiss nine years at Foundation. Being hired in 1992 was my proverbial "big break" and I will always be grateful to Ron Thornton for giving this wide-eyed kid a chance. Working on the groundbreaking *Babylon 5* and contributing to the Star Trek legacy was a dream come true. Snaring an Emmy Award in the process added the sweetest possible icing on an already scrumptious cake.

With such a coveted life, how could I possibly be anything less than catatonic over being fired? To explain my current state of being, let me digress for a minute as I revisit a favorite topic: cheeseburgers.

Back in the midst of my Foundation years, I wrote a column called "Fat Elvis," in which I described the slippery slope to sloth. And I elucidated why even the hungriest young go-getter can lose his voracious appetite after a steady diet of cheeseburgers (also known as a nice, fat, weekly paycheck). In fact, I wrote that autobiographical column to motivate myself - the Mojo diet to creative independence.

But, damn, those cheeseburgers are tasty!

No matter how many times I reminded myself that I had loftier goals, I did nothing. Regardless of how many movies and TV shows I saw that made me say, "I can do better," and despite the number of people I knew who were realizing their personal dreams, I kept coasting along, cashing that check, stuffing my face with cheeseburgers.

Of course, the admiration of my friends, my minor-celebrity status, and that damned award sitting in my living room, certainly don't scream "try harder." But also, under that psyche comforting layer of fat, lurked the ever nagging hobgoblin, my fear of failure.

How can I face the world if I give it my best shot and miss? No, it's safer and easier to assure myself that I'm already a success. But how can I give up without trying? And so went the turmoil of my life for the last four years.

How many of you are staring at this page as if it were a mirror?

The fact remains, it's a lot easier to stand at the water's edge of opportunity, gazing at your reflection, and not take the plunge.
If you spend enough time contemplating and hesitating, the sun will set on your indecision. Your life will march on inexorably, until one day you realize that you have chalked up those hopes and dreams as the folly of youth, never to look back.

If some joker unexpectedly shoves you into the deep end – then you'll have no choice but to sink or swim. You'll probably flap around for a while, panicking like an idiot, certain you are going to die. But if you're lucky and talented, you'll regain your ballast; and before long, you will be swimming freestyle, having a blast.

For some people, that unforeseen dunk may be the best thing that ever happened to them. I'll let you know, as soon as I dry off.

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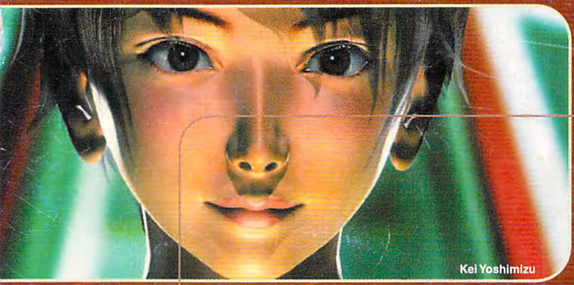
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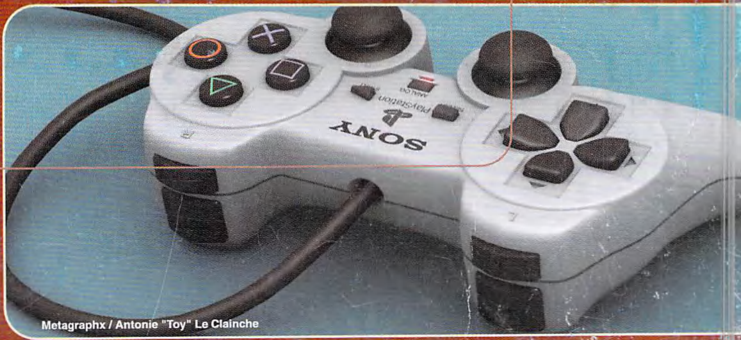
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